National Pesticide Information Center

2020 Annual Report

Second Operational Year

February 15, 2020 - February 14, 2021

Cooperative Agreement # X8-83947901
Environmental and Molecular Toxicology
Oregon State University
310 Weniger Hall
Corvallis, OR 97331-6502
800-858-7378
npic.orst.edu

npic
NATIONAL PESTICIDE INFORMATION CENTER

Environmental & Molecular Toxicology
Oregon State University

The National Pesticide Information Center (NPIC) is a service that provides a variety of pesticide and related information to the public and professionals across the United States and its territories. NPIC is a cooperative agreement between Oregon State University and the US Environmental Protection Agency. The 2020 Annual Report covers the period of February 15, 2020 - February 14, 2021.

DISCLAIMER

Material presented in this report is based on information as provided to NPIC by individuals who have contacted NPIC for information or to report a pesticide incident. None of the information reported to NPIC has been verified or substantiated by independent investigation by NPIC staff, laboratory analysis, or any other means. Based on the information provided, NPIC qualifies the information by assigning a certainty index (CI) and a severity index (SI). NPIC makes no claims or guarantees as to the accuracy of the CI, SI, or other information presented in its reports, other than that NPIC has done its best to accurately document and report the information provided to NPIC.

Table of Contents

Program Highlights and Summary 3
Objectives and Deliverables 4-12
Difficulties, Deviations, and Departures 12
Pesticide Data 13-35
Symptoms greater than minor severity 36-40

NPIC Mission Statement

- The primary mission of the National Pesticide Information Center (NPIC) is to provide objective information, collect and report incident data, use cutting edge technologies, and conduct extensive outreach to diverse audiences to promote a better understanding of pesticide use, with an overall goal of reducing risks to people, animals, and the environment.

General Compliance Statement

- Throughout the reporting period, NPIC has complied with the requirements of the U.S. Environmental Protection Agency (U.S. EPA) regarding Title VI of the Civil Rights Act of 1964 and Section 13 of the FWPCA Amendments of 1972.
- NPIC has complied with U.S. EPA Guidelines regarding procurement requirements stipulated in 40 CFR Part 33.
- NPIC has complied with all special requirements specified by U.S. EPA as part of the funding authorization of this project.

Submitted To:

US Environmental Protection Agency
Office of Pesticide Programs

Submitted by June 14, 2021 from:

Jeff Jenkins, PhD
Director/Principal Investigator

Introduction

NPIC provides objective, science-based information about pesticides and related topics to enable people to make informed decisions about pesticides and their use. In this, the second year of the project period under cooperative agreement #X8-83947901, Oregon State University (OSU) provided information to millions of people by phone, email, social media, data-sharing, mobile web apps, and/or web content.

NPIC supports the U.S. Environmental Protection Agency (U.S. EPA)'s 2018-2022 Strategic Plan Goal 1: Core Mission, and Objective 1.4: "Ensure Safety of Chemicals in the Marketplace," which states: "Effectively implement the Toxic Substances Control Act, and the Federal Insecticide, Fungicide, and Rodenticide Act to ensure new and existing chemicals and pesticides are reviewed for their potential risks to human health and the environment and actions are taken when necessary." NPIC also supports the mission of the OSU Extension System, conveying research-based knowledge in a way that is useful for people to improve their lives, their homes, and their communities.

The complete record of NPIC accomplishments for the operational year includes this annual report, four quarterly reports, and a quality assurance report.

Program Highlights and Summary

- NPIC responded to 10,113 inquiries this grant year, including 6,915 phone calls, 1,691 emails, and 1,507 voicemail messages. The average call duration was 6.6 minutes.[1] NPIC responded to 291 inquiries in Spanish, three in Hindi, two in French, one in Afrikaans, one in American Sign Language, and one in Portuguese.
- Most inquiries to NPIC came from members of the public (87%). NPIC also responded to 93 inquiries from government/enforcement agencies, 81 inquiries from medical professionals (27% veterinary), 17 inquiries from pesticide retailer employees, and 14 inquiries from health agencies.
- One human death related to pesticides was reported to NPIC. Thirty-five animal deaths were reported.
- The NPIC website received 7,606,574 pageviews.[1] NPIC added 138 new links to its website as high-quality science and regulatory items were identified.
- NPIC transitioned to remote work in March 2020 due to emergency restrictions for COVID-19. Without a lapse in service, employees adapted existing policies and technology off-site in order to respond to NPIC inquiries, manage the pesticide inquiry database, train new hires, and conduct all other regular activities.

[1] This metric cannot be calculated by half-month. As such, these numbers represent the calendar year of 2020.

How are people finding NPIC?

3,451 from the internet (34.1%)

2,470 from a product label (24.4%)

956 from previous contact with NPIC or word of mouth (9.5%)

918 from pest control companies (9.1%)

175 from EPA personnel (1.7%)

173 from medical/veterinary professionals (1.7%)

57 from state pesticide regulatory agencies (0.6%)

30 from university extension (0.3%)

1,883 from other/unknown entities (18.6%)

Objectives and Deliverables

1. Serve as a source of factual, unbiased information for diverse audiences including the agricultural and pest control community, healthcare providers, educators, consumers, and the public.

Anticipated out-comes	Actual outcomes
Maintain open hours from 8:00am-12:00pm, Monday - Friday	NPIC maintained open hours from 8:00am to 12:00pm Pacific Time, Monday-Friday, excluding holidays, with no closures due to technical or staffing issues. Due to the immediate and unexpected need to work from home during the COVID-19 pandemic, the NPIC hotline was closed for five business days March 16-20, 2020. To compensate, NPIC responded to voicemails and emails from 8:00am to 3:00pm those days, representing an increase in service hours. NPIC did not experience any full or partial days of closure.
Maintain multilingual capabilities	NPIC maintained multilingual capabilities during 100% of operational hours.
Respond immediately to 95% of calls	NPIC responded immediately to 99% of calls received during open hours outside of the transition period to work from home during the COVID-19 pandemic. Occasionally, people choose to leave a voicemail.
Respond to 95% of messages within one business day	NPIC responded within one business day 99% of the time when inquiries were received via voicemail, email, and/or social media.
Recruit/retain highly qualified pesticide specialists	NPIC retained three highly qualified pesticide specialists during this grant year and hired five additional specialists.
Perform 5 collaborative outreach/expert consultation efforts	NPIC collaborated with 21 organizations on 23 collaborative outreach efforts this grant year to provide outreach and expert risk communication instruction to the public, medical professionals, agricultural growers, and educators, including: • NPIC and EPA Region 10 identified outreach gaps and developed a fact sheet: **Using Disinfectants to control the COVID-19 virus**. • Amy Cross presented about disinfectants and List N to the National School IPM Work Group. • NPIC shared nationwide County Extension contacts with the USDA Agricultural Marketing Service for outreach to growers about COVID-19 federal assistance. • NPIC provided additions to a PERC-med newsletter highlighting NPIC services. • NPIC and the Oregon Department of Agriculture created joint messaging for social media guidance about not using disinfectants on masks and also translation of the **COVID-19 Fact Sheet in Spanish.** • NPIC, the American Association of Poison Control Centers, the Oregon Poison Control Center, and the Virginia Poison Center hosted a **Facebook Q&A** about disinfectant health and safety during COVID-19.

1. Serve as a source of factual, unbiased information for diverse audiences including the agricultural and pest control community, healthcare providers, educators, consumers, and the public (continued).

Anticipated outcomes	Actual outcomes
Perform 5 collaborative outreach/expert consultation efforts (continued)	• Amy Cross presented at the Tribal Environmental Coalition in Oklahoma (TECO) conference: "Using Disinfectants Against COVID-19: List N, Precautions, and Efficacy." • NPIC discussed clopyralid soil contamination with Oregon agencies within the Pesticide Analytical Response Center (PARC) and drafted/reviewed health and testing information provided to affected households through the Oregon Department of Agriculture. • NPIC reviewed an EPA Region 8 advertisement about the NPIC disinfectant webinar, which was published in July by the Colorado Coalition for School IPM Newsletter. • NPIC approved modifications of the NPIC disinfectant wipes infographic for a member of the National School IPM Workgroup. • NPIC worked with the Pesticide Applicator Certification & Training (PACT) Planning Committee to compile disinfectant safety resources and lists for groups like custodians and other front-line workers. • NPIC staff presented about disinfectant safety to the Inter-Tribal Environmental Council. • NPIC shared messaging about risks of impregnated masks with the American Association of Poison Control Centers and the National School IPM Workgroup. • Amy Cross presented for state, Tribal, and federal regulators at the Compliance and Enforcement Management PREP virtual conference. • NPIC worked with the Florida Department of Agriculture to customize an **NPIC infographic** for Florida residents to search for registered disinfectants in their state. • Amy Cross presented about disinfectant safety to a food safety group at the University of Nebraska Extension. • NPIC and PERC-med provided a webinar for medical professionals, hosted through Oregon Pacific Area Health Education Center of Samaritan Health Services. Topics included disinfectant safety, efficacy, and pesticide exposure reporting. • NPIC provided risk communication training for pesticide applicators and educators through the Purdue Pest Management Annual Conference. • NPIC discussed disinfectant safety with pesticide applicators through the Central Oregon Pest Management program hosted by Oregon PSEP. • NPIC provided risk communication training for pesticide applicators through the Chemical Applicator program hosted by Oregon PSEP. • NPIC participated in the EPA Region 10 Director's meeting, sharing inquiry trends and COVID-19 outreach materials with federal and state regulators, as well as state PSEP coordinators. • NPIC provided assistance to EPA Region 6 by answering questions from the Texas Department of Agriculture regarding product labeling and toxicity categories for abamectin. • NPIC aided the Oregon Department of Agriculture's citizen advocate by answering questions from a grower regarding dieldrin and other pesticide residue risks to employees.

2. Provide information on a wide variety of pesticide-related subjects including, but not limited to, pesticide products, toxicology, environmental chemistry, safety practices, pesticide regulation, enforcement, risk assessment, risk management, environmental effects, clean-up and disposal, understanding the label, recognition and management of pesticide poisonings, and integrated pest management (IPM).

Anticipated outcomes	Actual outcomes
Monitor 5-10 relevant publications	In order to stay current, NPIC staff members monitored 21 relevant publications and publication indexing services, including federal register notices, affiliated dockets, newsletters, listservs, and selected journals of relevance.
Evaluate information about pesticide science and regulation	NPIC exceeded this year's goal of evaluating 1,000 articles, documents, and websites in order to maintain and expand up-to-date, reputable, immediately accessible and optimized information about pesticide science and regulation. This year NPIC evaluated 2,272 relevant articles, documents, and websites.
Create/update 20 AI files	NPIC updated 12 active ingredient (AI) files and created eight new AI files: **New** • (E)-5-Decenol • Autographa californica • Chlorohexidine digluconate • Irgarol • Lipo-chitooligosaccharide • N-bromosulfamate salts • UV Light • Zinc pyrithione **Updated** • 1-Methyl-cyclopropene • Acetamiprid • ADBAC • Bromadiolone • Chlorfenapyr • Clopyralid • DDAC • Dichlobenil • Hydrogen Peroxide • Imazapyr • Isopropanol • Paclobutrazol Through monitoring activities, NPIC added 757 new documents to AI files, including 493 new documents added to existing files, identified through regular monitoring activities.
Attend 15-20 CE events	NPIC staff members attended 42 events for continuing education this grant year, including 23 webinars, eight events hosted by Oregon State University, seven meetings, conferences, or workshops hosted by other organizations, three in-house presentations, and one class at Oregon State University.
Track risk-reduction conversations	NPIC tracked certain elements in order to quantify risk-reduction activities. In conversation with callers, pesticide specialists discussed following the label 2,148 times, ways to minimize exposure 2,059 times, IPM concepts 567 times, and environmental protection (including pollinator protection) 69 times.
Maintain continuous storage capacity	NPIC maintained storage capacity in order to ensure continuous access to NPIC resources by stakeholders, documenting and reporting milestones to inform future efforts for secure, long term data storage and hosting capacity.

3. Address current and emerging pesticide-related issues and provide federal, state, and local resources on the topics in Objective 2.

Anticipated outcomes	Actual outcomes
Discuss "Important and Interesting" cases	NPIC specialists were polled about trends and discussed cases flagged as "Important and Interesting" as a team. Specialists discussed 51 cases during the grant year.
Discuss trends and data with OPP as part of quarterly coordination meetings (QCM)	NPIC discussed trends and data with OPP during two quarterly coordination meetings on August 26, 2020, and February 3, 2021. Disinfectant topics of focus during the meetings included: • Dramatic increase in disinfectant related calls in early 2020, including top #1 and #2 active ingredient ranking for ADBAC and DDAC inquiries during Q1 • Using disinfectants as a replacement for whole space sprays or air sprays • Spraying masks • Using disinfectants as hand sanitizer • Schools considering electrostatic sprayers for classrooms, busses • School disinfection with products without considering students may be eating at desks (may not be Food Contact Surface products) • Confusion about residual activity of "24-hour" sanitizer and disinfectant • Questions about distributors making SARS-CoV-2 claims verbally • Questions about importing, selling, and regulation Other trends and data discussions with EPA included: • NPIC and OPP AD discussed regulations and issues for on-site generation products. • NPIC queried informally for inquiries related to disinfectant exposures or illnesses related to ICE detention facilities, as requested by Yvette Hopkins, OECA. • NPIC and OPP AD discussed a consumer complaint about eye damage from UV light use and the option to report to CPSC. Follow-up resulted in targeted messaging about infused masks through NPIC and the American Association of Poison Control Centers. Messaging was discussed with staff from the OPP Health Effects Division and Antimicrobials Division.
Share noteworthy cases with EPA	NPIC shared 49 noteworthy cases with the Project Officer during the 2020 grant year.
Compile statistics and submit timely reports	NPIC compiles summary statistics about inquiries received on a quarterly and annual basis. All quarterly reports, this annual report, and a quality assurance report were submitted within the extension provided by June 14, 2021.
Submit VIRP and Eco-reports to EPA	Veterinary professionals submitted 19 incident reports using NPIC's Veterinary Incident Reporting Portal (VIRP). Thirty-seven (37) incident reports were submitted using NPIC's Ecological Incident Reporting Portal (Eco-Portal). All of these are included in supplements to this grant year.

3. Address current and emerging pesticide-related issues and provide federal, state, and local resources on the topics in Objective 2 (continued).

Provide special reports to EPA and state pesticide regulatory agencies within 2 weeks	NPIC provided 19 special reports this grant year within nine business days. Extended timelines were negotiated to accommodate all 2019 data for requests made early in 2020. NPIC received data requests from: • California Department of Pesticide Regulation (2) • EPA OPP Health Effects Division (7) • EPA OPP Pesticide Reevaluation Division (8) • Oregon Department of Agriculture • Vermont Agency of Agriculture, Food and Markets
Promote the availability of NPIC data	NPIC promoted the availability of inquiry data to states and tribes through the Association of American Pesticide Control Officials' State FIFRA Issues Research and Evaluation Group (AAPCO – SFIREG).
Review project deliverables to coordinate with AAPCC and OHSU	NPIC continued to monitor and improve its working relationship(s) with AAPCC and OHSU, ensuring that baseline expectations were met and/or exceeded. NPIC, the American Association of Poison Control Centers, the Oregon Poison Control Center, and the Virginia Poison Center hosted a Facebook Q&A about disinfectant health and safety during COVID-19. The content is available on NPIC's webpage: **Disinfectant safety during the COVID-19 pandemic.**
Make timely referrals to appropriate state and local resources	Annually, specialists made timely and appropriate referrals with <3% margin of error. This standard was evaluated as part of annual staff evaluations in Q3.

4. Provide reputable, science-based information in a manner understandable to a lay audience to help people make informed decisions.

Anticipated outcomes	Actual outcomes
NPIC will create/update 40 new and/or translated items per year	NPIC created or updated 230 new and/or translated materials this year, which may include topic summaries, FAQs, articles, unique social media posts, and other media, with 90% of items meeting reading-level targets.
Create/update 5-10 web pages	NPIC created/updated 15 new web pages this year titled: • Using Disinfectants to Control the COVID-19 Virus (**English** | **Spanish**) • **Antimicrobianos** (Antimicrobials) • **Comprendiendo la selección de pesticidas antimicrobianos** (Understanding and Selecting Antimicrobial Pesticides) • **Selección del producto antimicrobiano adecuado** (Selecting the Right Antimicrobial) • **Antimicrobianos para patógenos en sangre y fluidos corporals** (Antimicrobials for Pathogens in Blood and Body Fluids) • Disinfectants and COVID-19 Resources (**English** | **Spanish**) • FAQ: Disinfectant safety during the COVID-19 pandemic (**English** | **Spanish**) • FAQ: **Outdoor Pesticide Treatments** • **Vídeos relacionados con pesticidas** (Pesticide-related videos) • **Kissing Bugs** • **Houseplant IPM** • **Bed Bugs and DDT** Fact Sheet

4. Provide reputable, science-based information in a manner understandable to a lay audience to help people make informed decisions (continued).

Develop 2-4 new infographic materials	NPIC developed three new infographics, titled: • Using Disinfectants and Wipes Against COVID-19 (**English** | **Spanish**) • **Bacillus Thuringiensis (*Bt*) Strains**
Develop 2-4 new fact sheets	NPIC developed four new fact sheets titled: • **Antimicrobianos** (Antimicrobials) • Using Disinfectants to Control the COVID-19 Virus (**English** | **Spanish**) • **Bed Bugs and DDT** Fact Sheet
Annually, develop up to 2 videos	This grant year, NPIC developed and posted a new Spanish video titled, "**Reducción de la exposición a desinfectantes en el lugar de trabajo**." (Reducing Disinfectant Exposures in the Workplace)
Formalize procedures for reference selection in fact sheets	NPIC continued to formalize procedures for selecting references in fact sheets during Year 2, using scoping work from Year 1 to inform ongoing plans. An overview of procedures is provided in "**Writing NPIC Fact Sheets**".
Post 2-4 items per week in social media venues	NPIC posts new items in social media venues (Facebook and Twitter) promoting safe use practices, IPM, and pesticide label comprehension. This grant year NPIC uploaded 206 posts, averaging 4 per week.
Develop and deliver one webinar	This grant year, NPIC developed and delivered two new webinars titled "**Disinfectant safety during the COVID-19 pandemic**" and "**Disinfectant Safety for Medical Professionals**."
Remove/replace 100% of broken links	NPIC conducted an in-depth review of current procedures to identify and replace external broken links on our website. New software was implemented to better achieve annual objectives. This grant year, NPIC removed or replaced 693 broken links.
Update 200 contacts	In order to provide the best referrals when appropriate, NPIC actively verifies/updates contact lists (i.e., county extension, vector control, manufacturers) on a routine basis. This grant year, NPIC updated 4,244 contacts, including: • County Extension • Household and Hazardous Waste • State Environmental Agencies • Vector Control
Ensure continuous access to NPIC apps	NPIC ensured continuous access to NPIC apps by stakeholders, maintaining software applications, tools, and mobile apps. This grant year, NPIC updated the **Herbicide Properties Tool** (HPT). New guidance directed users to additional information on NPIC's website and comprehensive fact sheets, when available for herbicide active ingredients.

4. Provide reputable, science-based information in a manner understandable to a lay audience to help people make informed decisions (continued).

Anticipated outcomes	Actual outcomes
Coordinate with OPP on proposed projects	NPIC coordinated and communicated with OPP frequently throughout the year including: • NPIC discussed registrant guidance with OPP's Antimicrobial Division (AD), clarifying SARS-CoV-2 product labeling and advertisement claims. We also discussed residual claims for List N disinfectant products to incorporate into NPIC outreach materials. • NPIC discussed outreach material needs with the EPA Project Officer, related to COVID-19 and disinfectants. • NPIC discussed suggested changes to NPIC pages about disinfectants, offered by OPP FEAD. • NPIC discussed plans for outreach materials to school administrators with OPP and EPA Region 5. • NPIC hosted a webinar "**Disinfectant safety during the COVID-19 pandemic**", coordinating with the EPA Project Officer to advertise the webinar to EPA and other regulatory personnel. • OPP's Health Effects Division and NPIC discussed ways to increase messaging related to infused masks. NPIC used this information to create targeted social media outreach and to communicate with the American Association of Poison Control Centers to create their own messaging. Messaging was also shared with the National School IPM Workgroup • Discussions with the Project Officer and the Office of Enforcement and Compliance Assurance to discuss best resources for registrants/distributors and Amazon retailers regarding pesticide devices and product registration. • Discussions with Toxic Substances Control Act (TSCA) contacts about NPIC services and referrals. • Discussions about bleach dilution guidance from CDC with OPP's Health Effects Division. • Discussions with OPP's Health Effects Division about outreach messaging regarding ivermectin use against COVID-19. • Discussions with OPP's Health Effects Division about outreach messaging related to wasping (form of substance abuse using insecticides).

5. Collect and disseminate quality pesticide incident data via a rigorous and well-defined data collection system.

Anticipated outcomes	Actual outcomes
Capture 80% of human demographics	NPIC specialists were able to document demographic information for 99% of human incidents, including age and/or gender. Callers occasionally decline to provide personal information such as age.
Capture 80% of incident information	"Incident information" includes information such as symptoms, time to onset of symptoms, and circumstances surrounding reported exposures. Among 1,319 reported incidents involving humans or animals, NPIC specialists were able to capture the symptom/scenario information in 92% of cases.
Capture 80% of product information	NPIC specialists were able to collect product information for 92% of reported incidents.
Capture 80% of location	NPIC specialists were able to document the location for 90% of reported pesticide incidents.
Capture 70% of exposure routes	Among the 1,319 reported incidents involving humans or animals, NPIC specialists were able to capture the exposure route in 78% of cases.
Classify reported signs/ symptoms in terms of severity and certainty	NPIC used standard operating procedures and rigorous quality control to classify reported signs/ symptoms in terms of severity (severity index) and in terms of their relationship to the reported exposures (certainty index). NPIC assigned a severity index 100% of the time when signs/symptoms were described (1,395 times). NPIC assigned a certainty index 100% of the time when signs/symptoms were described, and they could be compared to published reports about the active ingredient(s) involved (576 times).
Incorporate user feedback for the VIRP and Eco-portals (Y2, Y4)	NPIC responds to user feedback by updating/improving the Eco-Portal. While no improvements or updates were suggested during the site visit with OPP, NPIC and OPP discussed sharing Eco-Portal data with additional personnel within the Environmental Fate and Effects division. No suggestions for the VIRP were received from users.
Monitor data quality and take steps to ensure high standards are met	NPIC produced internally routed human and animal incident reports in coordination with Dr. Berman (OHSU), highlighting any changes in coding that were made in the QA process.
Deliver at least 6 quality assurance exercises lead by the QA/QC specialist.	The QA/QC facilitator led eight training exercises during staff meetings to facilitate consistency in data quality. Trainings included: • Workplace Exposure vs. Occupational Exposure • Narrative topic sentences • Preferred spellings of active ingredients in the PID • Coding Severity Index (SI) for incidents • Sentinel event criteria and narrative tags • Citing resources and consistency in data quality • What qualifies as an Incident or Incident-AI Unknown, under NPIC guidelines? • NPIC Boundaries
Conduct LARs to ensure data quality	Log Assessment Reviews (LARs) were conducted as part of regularly scheduled annual staff evaluations in Q3 (see Objective 6), including quantifiable measures of data completeness and coding consistency.

6. Provide exceptional customer service by integrating professionalism, teamwork, integrity, accountability, and a strong commitment to the public, as well as to the professional and medical communities.

Anticipated outcomes	Actual outcomes
Develop and execute a rigorous training program	NPIC hired one new pesticide specialist and rehired one former specialist in Quarter 1. NPIC also hired three new pesticide specialists in Quarter 4. The new specialist training program was adapted to the work-from-home environment due to COVID-19 restrictions. All training materials, exercises, and "stop points" were reviewed and revised, as needed, prior to each training. Senior specialists participated in training and served as mentors in addition to instruction provided by the Project Coordinator. An accelerated training review program was developed and successfully implemented for the rehired specialist.
Complete one evaluation event through 3rd-party assessment, yearly	Annually, NPIC will complete one evaluation event through 3rd-party assessment of NPIC services or by conducting website usability testing. • **Year 2: Web Usability Testing** Meredith Cocks conducted virtual website usability testing with participants from across the country. Their feedback and use patterns were recorded anonymously and used to identify potential areas for improvement. Feedback will be incorporated as the NPIC website undergoes updates. A report of the website usability testing results was sent to the Project Officer in Q4.
Evaluate staff members annually	NPIC comprehensively evaluated each staff member annually during Q3, including quantified measures of data collection skills (see Objective 5), referral appropriateness, customer service skills, and continuing education measures.
Site visit to EPA in GY2	NPIC presented GY1 data trends during a virtual site visit with various Office of Pesticide Program (OPP) divisions in October and November 2020. Follow-up conversations with OPP staff highlighted device resources for the public and manufacturers, resources for Amazon sellers flagged for inappropriate pesticide sales, interest in Dicamba incidents, interest in pollinator incidents, NPIC email operations, and a data request for Seresto collar incidents. NPIC staff met with the Project Officer separately for a meet-and-greet to become better acquainted with her role for our center.

Difficulties, Deviations, and Departures

Due to the immediate and unexpected need to work from home during the COVID-19 pandemic, the NPIC hotline was closed for five business days March 16-20, 2020. To compensate, NPIC responded to voicemails and emails from 8:00am to 3:00pm those days, representing an increase in service hours. NPIC did not experience any full or partial days of closure during this grant year.

Costanza Fantoni departed from NPIC in August 2020. Sean Perez departed from NPIC in January 2021.

Introduction to Inquiry Data

Pesticide specialists create a record for every inquiry, which is entered into the NPIC Pesticide Inquiry Database (PID). PID is a relational database, designed and built by NPIC. Custom reports may be available based on many of the items listed below.

There are three types of inquiries received by NPIC:

- Requests for information about pesticides and related issues
- Inquiries or reports about pesticide incidents
- Issues that are not related to pesticides

The type and amount of information entered into the PID depends on the type of inquiry.

NPIC aims to collect the following information for all pesticide-related inquiries:

- The inquirer's zip code or state
- The type of person (public, government, medical personnel, etc.)
- The type of question (health risk, regulatory compliance, label clarity, etc.)
- The EPA registration number, product name and/or active ingredient name(s)
- The actions performed (verbal information, referrals, transfers, etc.)
- The way the person found NPIC (web, referrals, etc.)

For pesticide incidents, NPIC makes every effort to collect these additional data:

- The type of incident (exposure route, misapplication, spill, etc.)
- The type of exposed entity (person, animal, building, etc.)
- The location of the incident (inside the home, outside the home, retail store, school, etc.)

If a person or animal was exposed to a pesticide, NPIC specialists attempt to collect additional information. However, they may not ask for all of these items during emergency medical events.

- A timeline describing the exposure duration, symptom onset, and resolution
- The person or animal's age, symptoms, and gender
- The species, breed, and weight of animals

When symptoms are reported and the active ingredient(s) are known, specialists evaluate the relationship between them to assign a **certainty** index. The certainty index is an estimate by NPIC as to whether the reported symptoms were consistent or inconsistent with published reports/materials for the identified active ingredients, in the context of the reported pesticide exposure. Specialists use the following tools when assigning the certainty index:

- A standard set of criteria, defined in NPIC training and procedures
- Published exposure reports and case studies
- Input from Dr. Berman, DVM, for human and animal exposure incidents
- Input from the PID QA/QC specialist

Symptoms are also characterized in terms of their **severity** in the PID. The criteria for defining major, moderate, and minor symptoms were adapted from similar mechanisms used by poison control centers in the National Poison Data System, and by the U.S. EPA in the Incident Data System.

NPIC DATA

The following pages include details about the incidents and inquiries documented by NPIC from February 15, 2020 to February 14, 2021.

Disclaimers and Explanatory Information:

- Material presented in this report is based on information provided to NPIC by individuals who contacted NPIC, primarily by phone or email.
- None of the information has been verified or substantiated through independent investigation by NPIC staff, laboratory analyses, or by any other means. This is similar to other self-reported public-health-monitoring programs, including the incident data recorded by poison control centers.
- If a person alleges/reports a pesticide incident, it will likely be recorded as an incident by NPIC. To meet the criteria, the person must have sufficient knowledge about the scenario, and it must be reported within two years of its occurrence.
- NPIC defines an incident in terms of public health. The NPIC definition includes any unintended exposure (i.e., child ate a mothball), intended exposures with adverse effects (i.e., illness in pets treated with flea/tick products), spills, and potential misapplications (i.e., a product intended for ornamental plants was applied to vegetables in the home garden.)
- About 1% of the time, callers' main purpose for contacting NPIC was to report a pesticide incident. More often, they contacted NPIC to obtain technical information. See page 20. Regardless, NPIC specialists make every effort to collect complete information about scenarios that meet the NPIC incident definition. Approximately 16% of inquiries to NPIC are coded as incidents.
- NPIC specialists are trained to recognize scenarios that could potentially lead to enforcement actions. In these cases, the standard operating procedure requires a referral to the appropriate State Lead Agency, provided to the inquirer. See page 21.
- NPIC qualifies the information received by assigning a certainty index (CI). The CI is an estimate by NPIC as to the likelihood that the reported signs and symptoms were consistent or inconsistent with published reports/materials for the identified active ingredients, in the context of the reported pesticide exposure. See page 27.
- NPIC makes no claims or guarantees as to the accuracy of the CI or other information presented in its reports, other than that NPIC has done its best to accurately document the information provided to NPIC.
- It is occasionally necessary to collect personally identifiable information (PII) in order to respond to inquiries, for example, by voicemail, email, or mail. Users of web-based incident reporting portals may have the option to submit PII as part of their reports. In all other cases, it is NPIC policy to refrain from collecting/documenting PII from people who contact NPIC through public channels.
- Through its cooperative agreement with EPA, NPIC provides special reports upon request. Special reports may also be provided to other cooperative agreement holders with EPA, such as state-level agriculture and environmental protection agencies. Other entities with interest in special reports should contact NPIC to inquire about the procedure and possible costs.

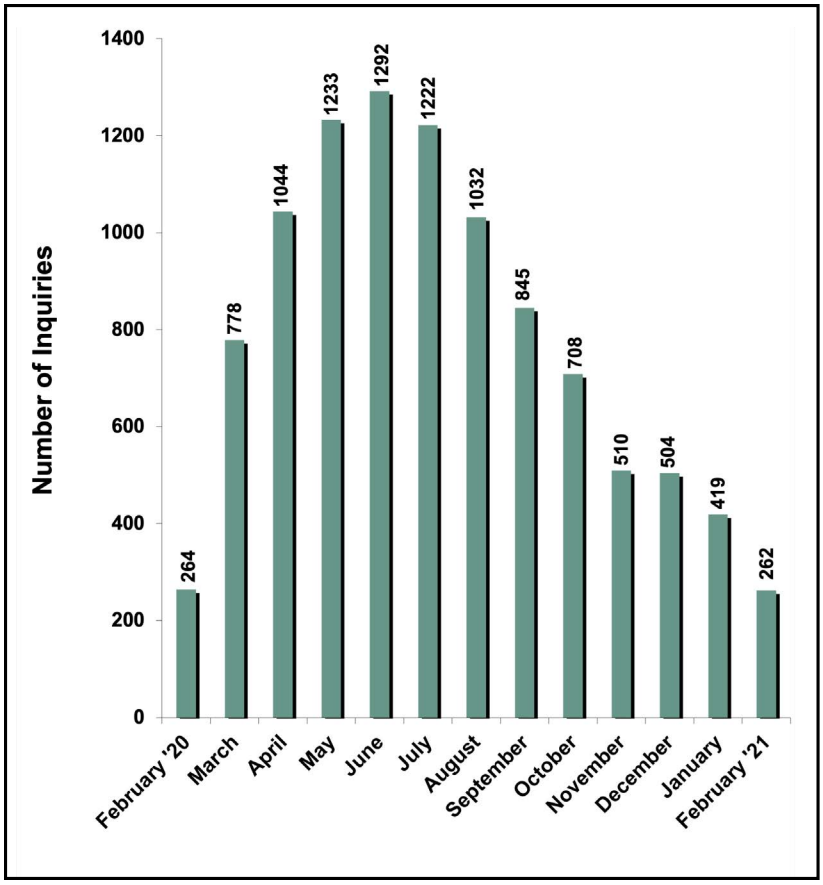
1. Monthly Inquiries

NPIC received 10,113 inquiries during this grant year. Graph 1 shows the number of inquiries received for each month. Seventy-three percent (73%) of the inquiries were received between April and October, concurrent with the part of the year when pest pressures are highest.

Table 1. Monthly inquiries

Month	Total
February 2020	264
March	778
April	1044
May	1233
June	1292
July	1222
August	1032
September	845
October	708
November	510
December	504
January	419
February 2021	262

Graph 1. Monthly inquiries



2. Type of Inquiry

NPIC classifies inquiries as information, incident, or other (not pesticide related) inquiries. A pesticide spill, misapplication, contamination of a non-target entity, or any purported exposure to a pesticide, regardless of injury, is classified as an incident.

The types of inquiries are summarized in Table 2 and Chart 2.

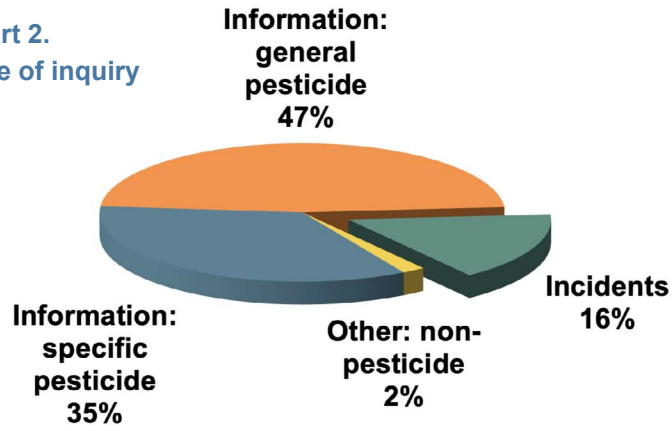
The majority of inquiries (8,305 or 82%) were informational inquiries about pesticides or related topics (Chart 2). NPIC responded to 4,791 (47%) information inquiries about pesticides in general. NPIC responded to 3,514 (35%) information inquiries relating to specific pesticides or active ingredients.

NPIC documented 1,623 incidents involving pesticides (16%). Pesticide specialists routinely provided requested information, evaluated the need for any referrals, and asked several scoping questions to document the circumstances surrounding the reported incidents.

Table 2. Type of inquiry

Type of Inquiry	Total
Information - General Pesticide	4791
Information - Specific Pesticide	3514
Incidents	1623
Other (nonpesticide)	185
Total =	10113

Chart 2. Type of inquiry



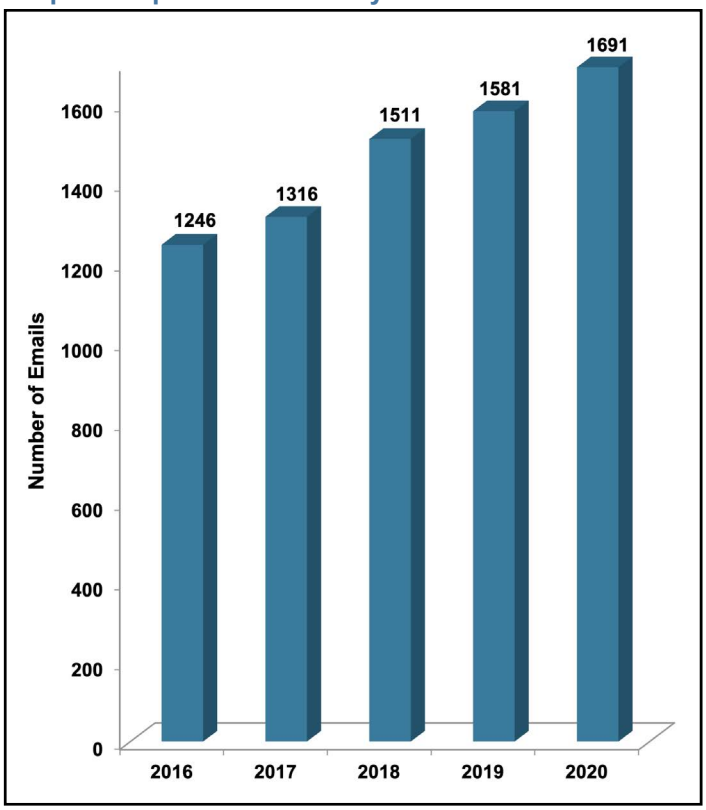
3. Origin of Inquiry

Table 3 summarizes the origin of inquiries received by NPIC. About 83% of inquiries were received by telephone.

Table 3. Origin of inquiry

Origin of Inquiry	Total
Phone	6915
Email/Web	1691
Voicemail	1507
Total =	10113

Graph 3. Inquiries received by email



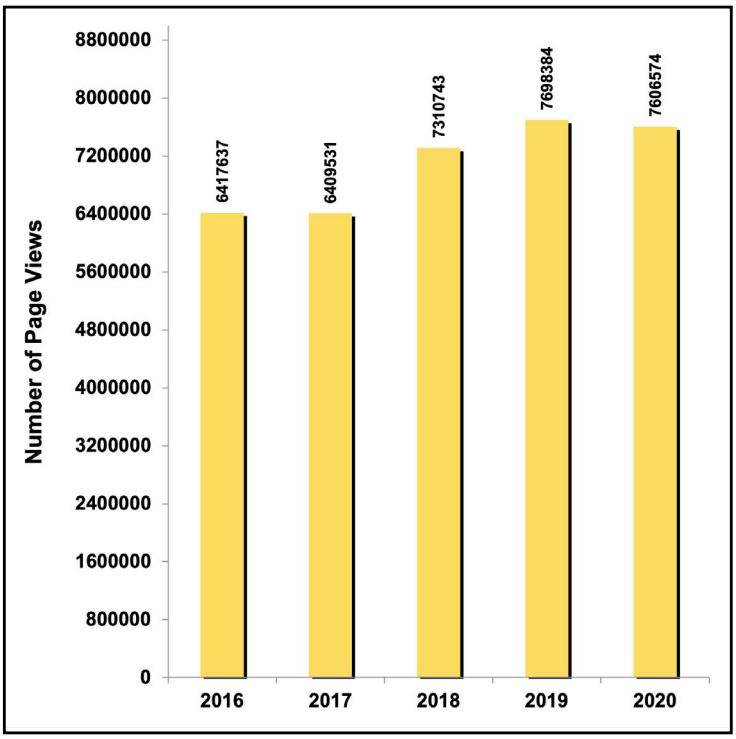
4. Website Access

The NPIC website attracted more than 4.1 million unique visitors viewing 7,606,574 pages during this period.

Most page views originated from queries on popular search sites (57.2%). Others were connected with NPIC from a bookmark (38.1%) or direct link (i.e., shared via email). The most popular search phrases used to reach NPIC were “roach,” “neem oil,” and “DDT.”

Visits to the website varied greatly in duration, with 157,385 visits lasting longer than 15 minutes. The average visit duration was approximately 1 1/2 minutes.

Graph 4.1. Page views

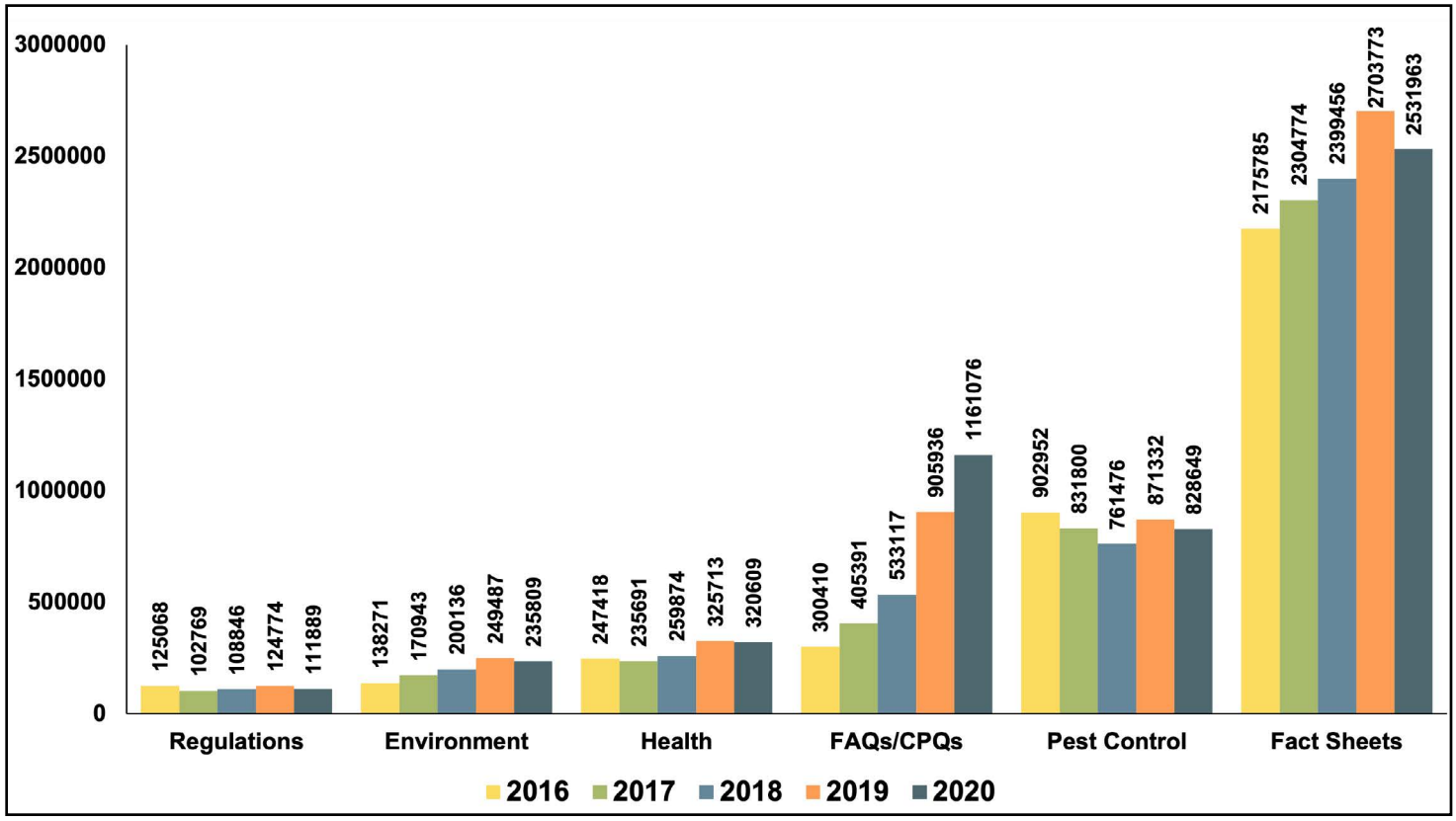


The most popular pages viewed were NPRO (475,684 views), the NPIC home page (358,120 views), the neem oil general fact sheet (244,257 views), Disinfectants and COVID-19 resources (220,711), and the diatomaceous earth general fact sheet (211,503 views).

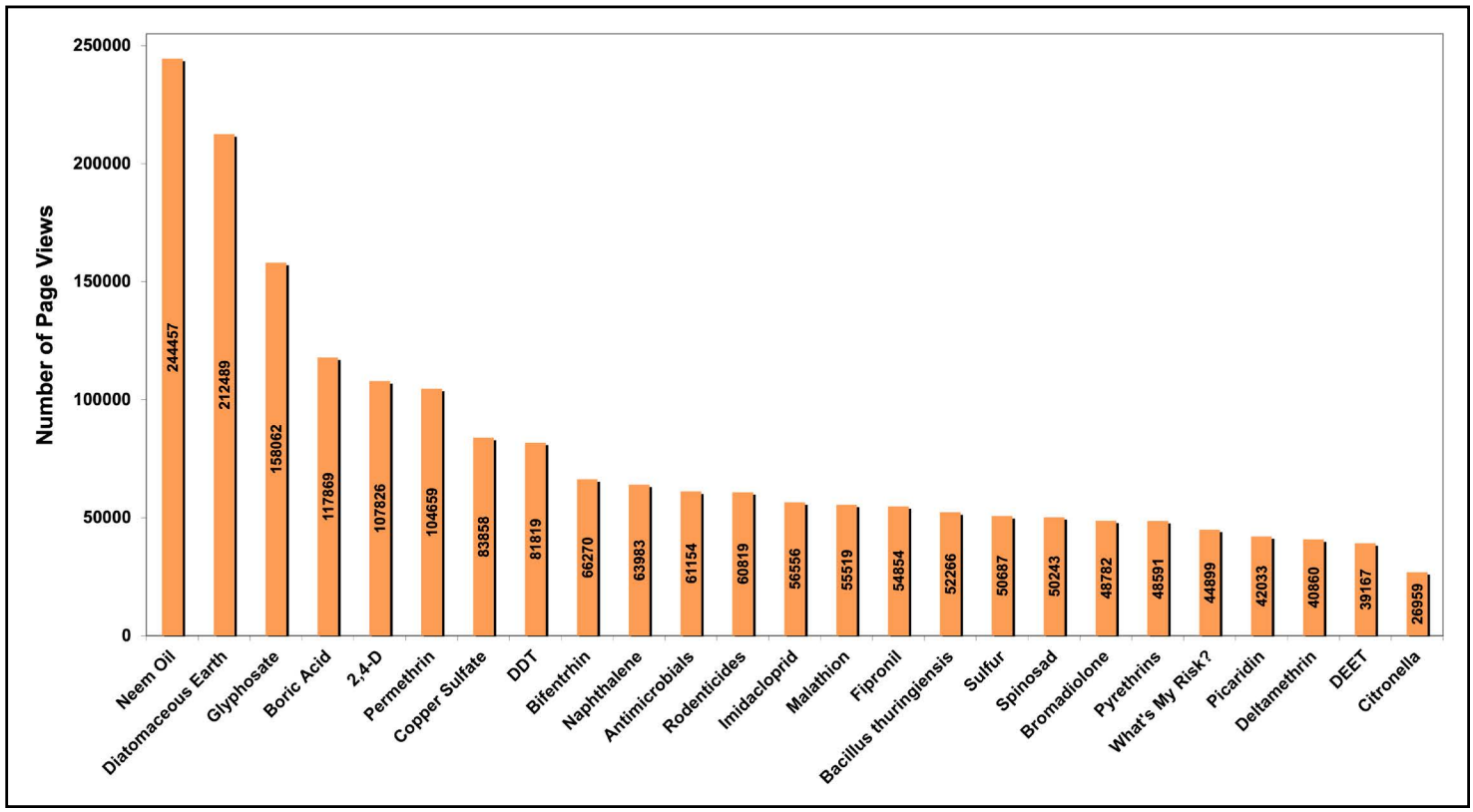
Table 4. Selected page views

Page Accessed	English page views	Number of pages available		Spanish page views	Number of pages available
Fact Sheets	2,487,162	261		44,801	11
FAQs/CPQs	510,807	121		650,269	95
Pest Control	501,687	68		326,962	37
Health and Safety	197,900	33		122,709	21
Environment	159,340	30		76,469	7
Regulations	101,287	27		10,602	7

Graph 4.2. Top 6 web pages viewed by topic



Graph 4.3. Top 25 active ingredient fact sheet pages viewed



5. Type of Inquirer

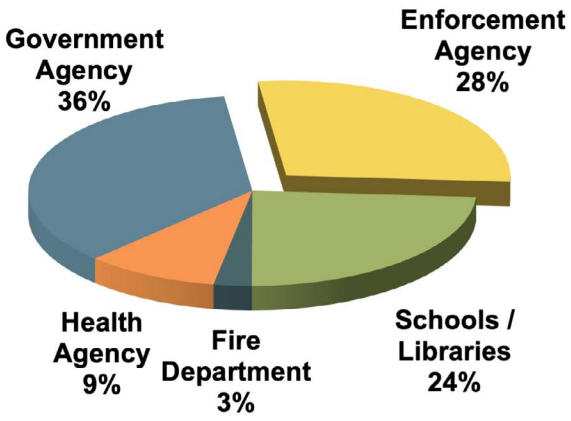
Table 5 summarizes the profession/ occupation of individuals contacting NPIC. The majority of inquiries to NPIC are from the public. Of the 10,113 inquiries received, there were 8,781 (86.8%) from the public, 546 (5.4%) from pesticide manufacturers, 146 (1.4%) from federal, state, local government agencies, or schools, and 81 (0.8%) from human and animal medical personnel.

Chart 5 summarizes the 146 governmental entities that contacted NPIC during the grant year. Health agencies include health departments and WIC personnel. Government agencies include city, county, and other government entities without enforcement roles. Enforcement agencies include the US EPA, state pesticide regulatory agencies, and police, among others.

Table 5. Type of inquirer

Type of Inquirer	Total
General Public	8781
Federal/State/Local Agencies	
Government Agency	52
Enforcement Agency	41
Schools / Libraries	35
Health Agency	14
Fire Departments	4
Medical Personnel	
Human Medical	59
Animal / Vet / Clinic	22
Other	
Pesticide Mfg / Mktg Co	546
Pest Control	92
Labs / Consulting	75
Farm	61
Media	28
Info Service / Unions	27
Retail Store / Nursery	17
Master Gardener	14
Beekeepers	9
Environmental Orgs	9
Nonmigrant Ag Worker	7
Lawyer / Insurance	5
Vector Control	4
Migrant Ag Worker	2
Other	209
Grant Year Total =	10113

Chart 5. Inquiries from federal / state / local agencies (Total: 146)



6. Type of Question

The questions received at NPIC are most often related to health (e.g., effects, risk, etc.), pest control (e.g., how to control a pest, pest habits, etc.), and application (e.g., methods, label clarity, etc.). “Other” questions (1,176) include all wrong numbers and people seeking their pest control companies, among others.

Questions about how to follow pesticide label directions were coded as “application” questions (1,454). Questions about regulations (1,271) range from “How do I get a new product registered?” to “Can the authorities make my neighbor stop spraying?”

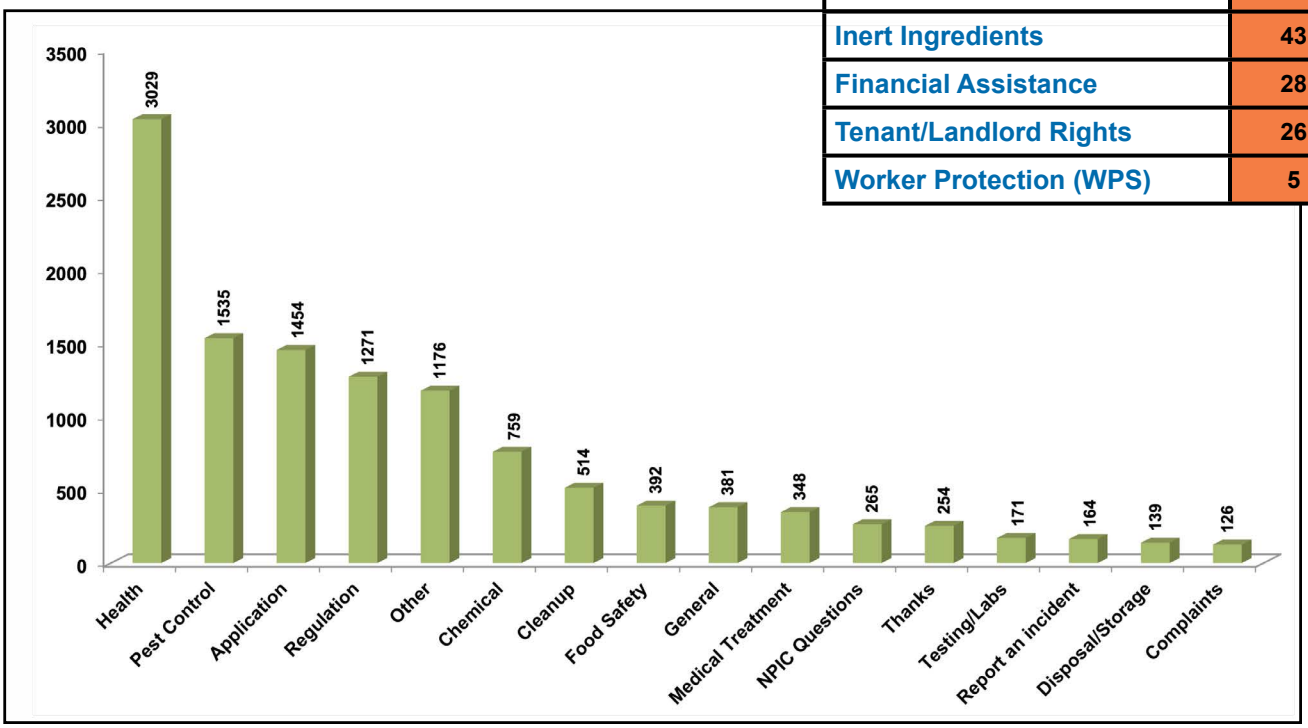
People contacted NPIC in order to report a pesticide incident 164 times. In these cases, NPIC provides people with appropriate local referrals for enforcement, as needed.

Inquiries may involve more than one type of question. Inquirers asked 12,451 questions during this grant year in the course of 10,113 inquiries.

Table 6. Type of question

Type of Question	Total
Health: human/domestic	2780
Pest Control	1535
Application	1454
Regulation	1271
Other	1176
Chemical	759
Cleanup	514
Food Safety	392
General	381
Medical Treatment	348
NPIC Questions	265
Thanks	254
Health: eco/wildlife	249
Testing/Labs	171
Report an incident	164
Where to Buy a Product	153
Disposal/Storage	139
Complaints	126
Just Wants Another Contact	95
Harvest Interval/Re-entry	71
Pros vs. Cons	52
Inert Ingredients	43
Financial Assistance	28
Tenant/Landlord Rights	26
Worker Protection (WPS)	5

Graph 6. Type of question



7. Actions Taken

Primary actions:

NPIC specialists respond to inquiries in a variety of ways. The primary actions are summarized in Table 7.1. Most inquiries (8,369) were answered by providing information over the phone. Information was also sent via email in 1,640 cases. Upon request, NPIC brochures and other materials were mailed to people eight times in this period.

Table 7.1. Primary action taken

Primary Action Taken	Number of Inquiries
	2020
Verbal Info	8369
Emailed Info	1640
Handled Inquiry in Spanish	189
Interpreted via Language Line Svs	52
Transferred to Specialist / Voicemail	34
Transferred to EC / PC	30
Sent NPIC Outreach Material(s)	5
Mailed Info	3

Risk reduction actions:

NPIC keeps track of certain conversation topics aimed at reducing pesticide risk. Specialists documented 4,843 risk reduction actions, detailed in Table 7.2.

Table 7.2. Risk reduction actions

Risk Reduction Action Taken	Number of Inquiries
	2020
Discussed Following the Label	2148
Discussed Ways to Minimize Exposure	2059
Discussed IPM Concepts	567
Discussed Environmental Protection	69

Referrals to other organizations:

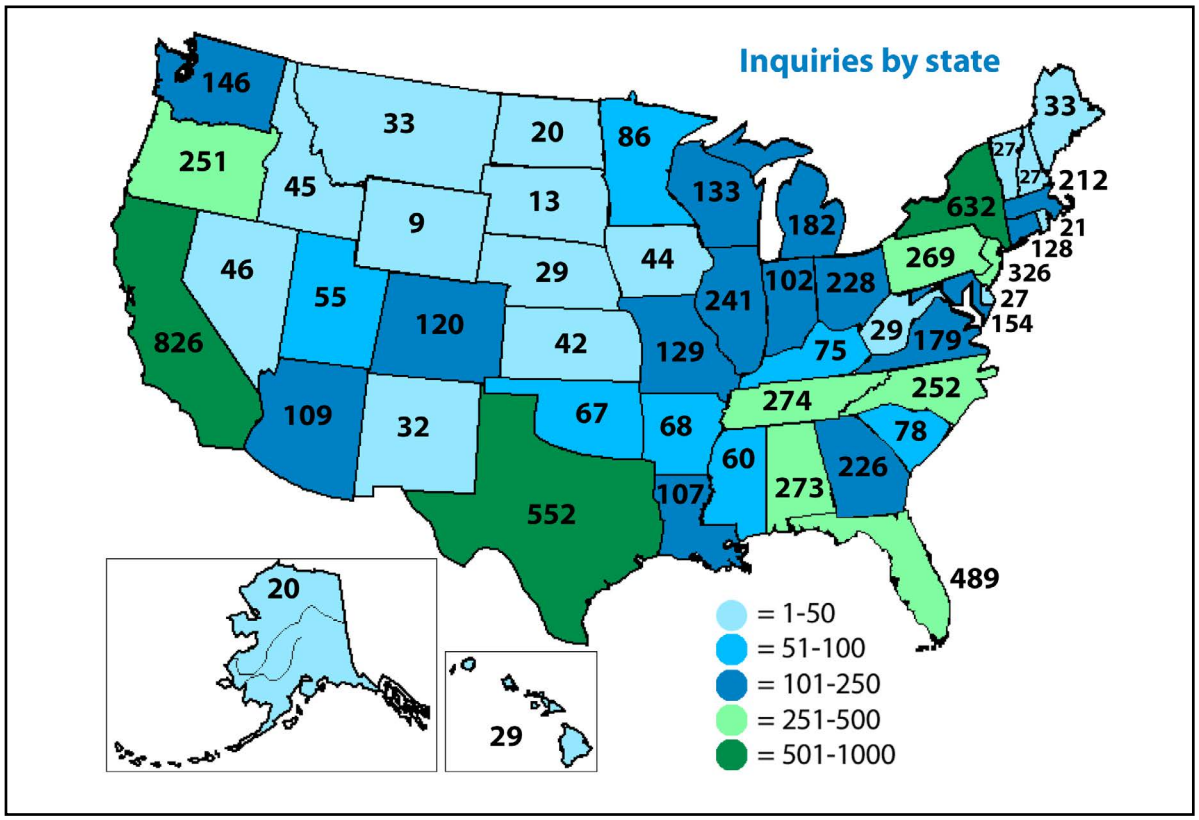
The number of referrals to various organizations is presented in Table 7.3. Specialists use their training and SOPs to evaluate the need for referrals, providing them only when the requested information is outside NPIC boundaries and there is an appropriate resource available to provide the information. Examples include “manufacturer/ distributor” for detailed application instructions and product complaints, “county extension” for pest control advice, and “state pesticide regulatory agencies” for enforcement.

Table 7.3. Referrals to other organizations

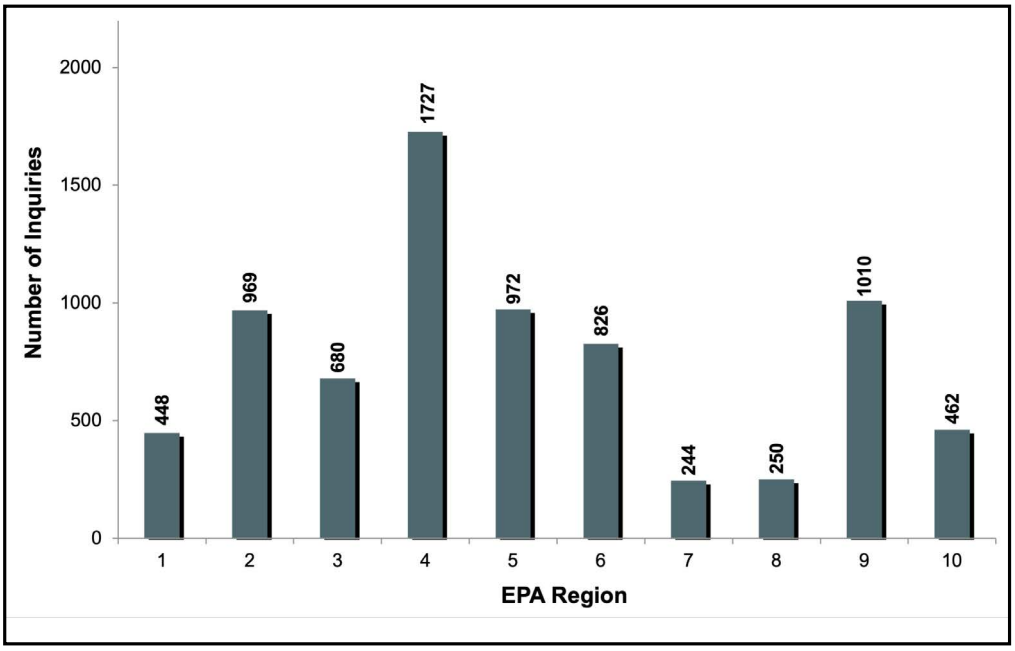
Organization Name	Number of Inquiries
	2020
Manufacturer / Distributor Contact	2018
NPIC Website	1408
County Extension Contact	861
State Lead Contact	825
EPA Website	589
EPA HQ / OPP Contact	483
Other Organization Contact	477
Poison Control Contact	325
EPA Region Contact	242
Hazardous Waste Contact	121
Department of Health Contact	121
Other State Agency Contact	105
Animal Poison Contact	100
Other Federal Agency Contact	44
OSHA Contact	12

8. Inquiries by State

The map below shows the number of inquiries received by NPIC from each state. The largest number of inquiries came from California, Texas, New York, and Florida. In addition to the states, NPIC received inquiries from Puerto Rico (11), District of Columbia (22), Canada (101), and other countries (251). Sometimes a state cannot be identified during the inquiry.



Graph 8. Inquiries by EPA region



Graph 8 summarizes inquiries by EPA region.

The top 5 regions with a known state were:

- Region 4 (22.8%)
- Region 9 (13.3%)
- Region 5 (12.8%)
- Region 2 (12.8%)
- Region 6 (10.9%)

9. Top 25 Active Ingredients for All Inquiries

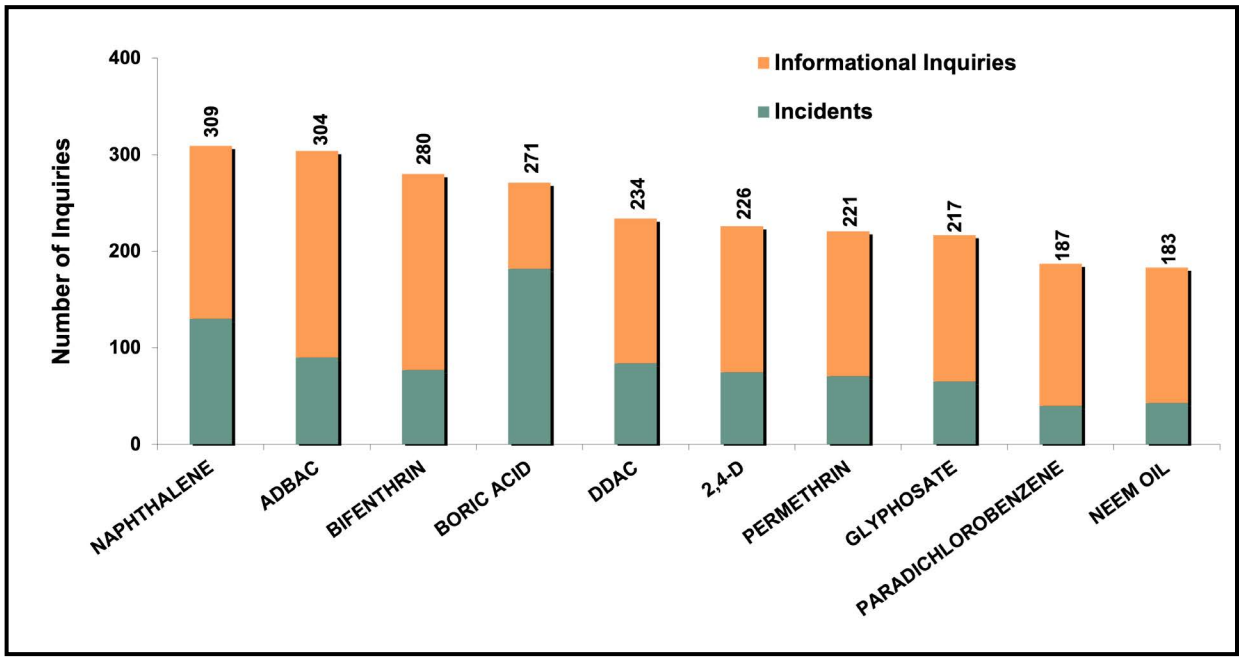
When inquiries to NPIC involve discussion of a specific product or active ingredient, specialists record the product and the active ingredient in the PID. Naphthalene was discussed in more inquiries than any other single active ingredient this year (Table 9, Graph 9). Of the 309 inquiries involving naphthalene, 130 (42.1%) were incidents. Note that an inquiry may involve discussion of several active ingredients.

Graph 9 illustrates the number of informational and incident inquiries for the top active ingredients discussed during the grant year.

Table 9. Top 25 active ingredients for all inquiries

Active Ingredient	Total Inquiries	Incident Inquiries	Information Inquiries
NAPHTHALENE	309	130	179
ADBAC	304	90	214
BIFENTHRIN	280	77	203
BORIC ACID	271	182	89
DDAC	234	84	150
2,4-D	226	75	151
PERMETHRIN	221	71	150
GLYPHOSATE	217	65	152
PARADICHLOROBENZENE	187	40	147
NEEM OIL	183	43	140
SILICON DIOXIDE	132	32	100
PYRETHRINS	123	33	90
DICAMBA	121	40	81
IMIDACLOPRID	117	45	72
PIPERONYL BUTOXIDE	113	40	73
FIPRONIL	105	28	77
MALATHION	98	37	61
CYPERMETHRIN	92	43	49
TRICLOPYR	90	25	65
DELTAMETHRIN	88	31	57
PYRIPROXYFEN	72	33	39
LAMBDA-CYHALOTHRIN	67	28	39
MECOPROP	66	17	49
SULFUR	65	18	47
CARBARYL	65	15	50

Graph 9. Top 10 pesticide active ingredients for all inquiries



10. Incident Type

An incident may involve a spill, misapplication, exposure, adverse effects, or any combination of these events.

There were 1,823 pesticide exposures and 753 accidents. Charts 10.1 and 10.2 provide further details. Among reported exposures, inhalation was the most common route of exposure (32.4%), followed by dermal contact (23.5%) and ingestion (17.0%). When a specific exposure route could not be identified, specialists documented an "Unknown" exposure route (11.7%).

Indoor spills (75) were reported more often than outdoor spills (29). Among reported misapplications (452), 83.0% were misapplications by the homeowner or resident. Misapplications by homeowners decreased between 2019 (412) and 2020 (375). The number of incidents involving drift decreased from 2019 (98) to 2020 (72).

Chart 10.1. Pesticide exposures (Total: 1,823)

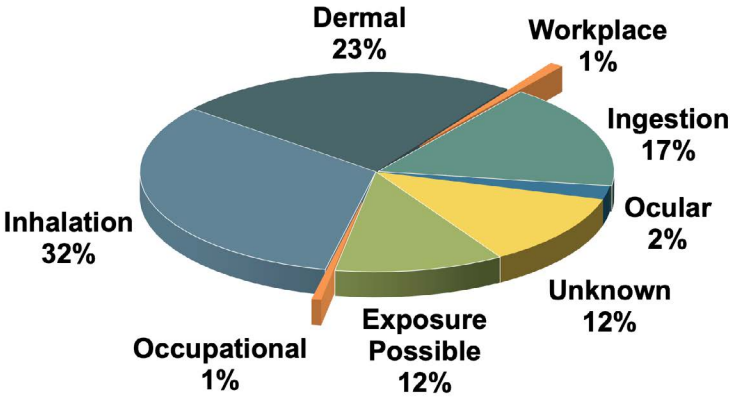


Chart 10.2. Pesticide accidents (Total: 753)

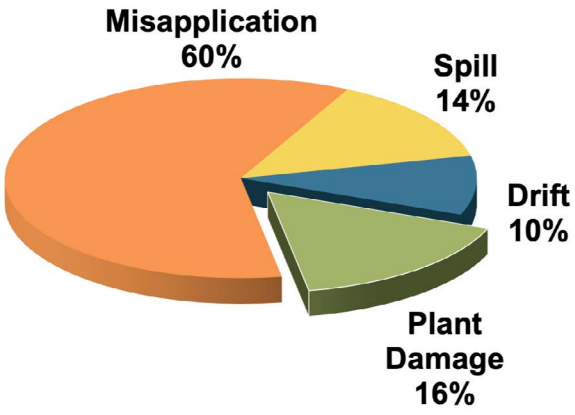


Table 10. Incident Type

Type of Incident	Total
Exposures	
Inhalation	591
Dermal	429
Ingestion	310
Unknown	214
Exposure Possible	211
Ocular	39
Workplace	17
Occupational	12
Accidents	
Misapp. - Homeowner	375
Plant Damage	122
Spill - Indoor	75
Drift	72
Misapp. - Other	35
Spill - Outdoor	29
Misapp. - PCO	28
Missapp. - Unknown	14
Other	2
Fire	1
Total =	2576

11. Top 25 Active Ingredients for Incidents

The most common active ingredients reported during incident inquiries are listed in Table 11. The table identifies the number of exposures or accidents involving humans, animals, and other entities, such as environmental entities and property. Naphthalene and paradichlorobenzene were involved in more reported exposures/accidents than any other active ingredients. Both are commonly found in mothballs and similar products.

In Table 11, the top three active ingredients for human and animal exposures are highlighted below. Naphthalene, paradichlorobenzene, and ADBAC were involved in the highest number of exposures for human incidents. The top three active ingredients with the highest number of exposures involving animals were boric acid, naphthalene, and iron phosphate.

Table 11. Top 25 active ingredients for incidents reported to NPIC[1]

Active Ingredient	Human Exposures	Animal Exposures	Other Accidents
NAPHTHALENE	229	30	242
PARADICHLOROBENZENE	179	23	206
BORIC ACID	51	119	18
ADBAC	69	5	21
2,4-D	41	10	34
BIFENTHRIN	48	18	18
PERMETHRIN	39	20	16
DDAC	60	5	20
GLYPHOSATE	32	16	18
IMIDACLOPRID	25	19	8
DICAMBA	24	4	17
IRON PHOSPHATE	2	27	1
PIPERONYL BUTOXIDE	26	8	11
BROMETHALIN	3	21	4
CYPERMETHRIN	34	2	10
MALATHION	20	1	18
CAPSAICIN	22	5	10
NEEM OIL	36	4	3
BROMADIOLONE	4	19	4
DELTAMETHRIN	24	6	8
FIPRONIL	8	13	10
PYRIPROXYFEN	20	11	3
PYRETHRINS	23	6	7
SILICON DIOXIDE	22	10	2
LAMBDA-CYHALOTHRIN	18	6	5

[1] Note that incidents may include multiple humans, animals, and other entities. See Table 9 for a count of incident inquiries by active ingredient.

12. Locations of Exposure or Accident

For incidents, specialists record the location of an exposure or accident. Of the 2,315 locations where exposures or accidents were documented, 88.2% occurred in the home or yard, 3.0% occurred in an agricultural setting, and 2.4% occurred at the intersection of home and agricultural property. Table 12 identifies the number of exposures or accidents reported to NPIC in a variety of other locations.

Based on inquiries, NPIC saw a decrease in incidents occurring at natural (e.g., ponds, lakes, streams) and treated water locations in 2020 (13) compared to 2019 (23).

Table 12. Location of exposure/accident

Location	Total
Home - Inside	1176
Home - Outside	865
Agricultural	69
Ag/urban interface	55
Vehicle	38
Other	29
Health Care Facility	19
Park/Golf Course	13
Office Building	12
Pond/Lake/ Stream	11
Roadside/Right-of-Way	10
Industrially Related	6
School/Day Care	5
Nursery/Greenhouse	3
Retail Store	2
Treated Water	2
Total =	2315

13. Environmental Impact

Table 13 presents the type of incidents reported for each kind of environmental or built entity. The most common environmental incidents reported to NPIC involve pesticide misapplications to buildings by residents (152).

Table 13. Reported environmental impacts

	Drift	Fire	Misapplication: Resident	Misapplication: Other	Misapplication: PCO	Misapplication: Unknown	Other	Plant Damage	Spill: Indoor	Spill: Outdoor
Agricultural Crop	6	0	0	0	2	0	0	5	0	0
Building - Home/Office	7	0	152	19	17	9	0	0	50	4
Home Garden	23	0	68	2	6	0	0	54	0	1
Home Lawn	2	0	57	4	0	2	0	9	0	5
Natural Water	0	0	1	0	0	0	2	0	0	0
Property	6	1	30	2	3	0	0	0	16	4
Soil/Plants/Trees	18	0	26	3	0	2	0	45	0	7
Treated Water	1	0	1	0	0	0	0	0	0	3
Vehicle	3	0	10	4	0	0	0	0	6	1
Other[1]	1	0	5	0	0	1	0	0	0	3

[1]"Other" refers to miscellaneous items not included in previous categories (i.e., sidewalk, food).

14. Certainty Index

Table 14 and Graphs 14.1 and 14.2 summarize the certainty index (CI) assignments for all incidents that were eligible to be classified. An incident is eligible to be classified if there was an exposed person or animal with reported signs/symptoms and at least one active ingredient was known.

Of the total number of entities assigned a CI (1,516), 20.4% of the cases were assigned a certainty index of "consistent," 17.6% were assigned an index of "inconsistent," and 62.0% were considered "unclassifiable." Because none of the information reported to NPIC has been verified or substantiated by independent investigation, uncertainty is common. This is the case with many forms of self-reported data, which are often used for monitoring public health. As a result, the certainty index assignment for "definite" is rarely assigned.

All certainty index assignments are reviewed by a quality assurance specialist. Dr. Berman, DVM, provides additional consultation for human and animal incidents.

What is the Certainty Index?

The certainty index is an estimate by NPIC as to the likelihood that the reported signs and symptoms were "**consistent**" or "**inconsistent**" with published reports/materials for the identified active ingredients, in the context of the reported pesticide exposure.

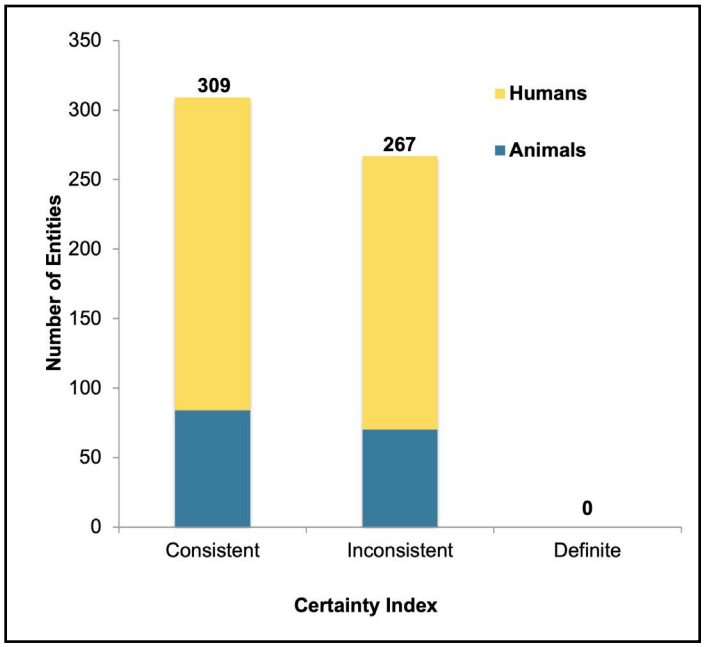
The certainty index is "**unclassifiable**" when one or more of the following criteria apply:

- An exposure occurred, but no symptoms were reported.
- No active ingredient could be identified.
- The presence or absence of symptoms was unknown.

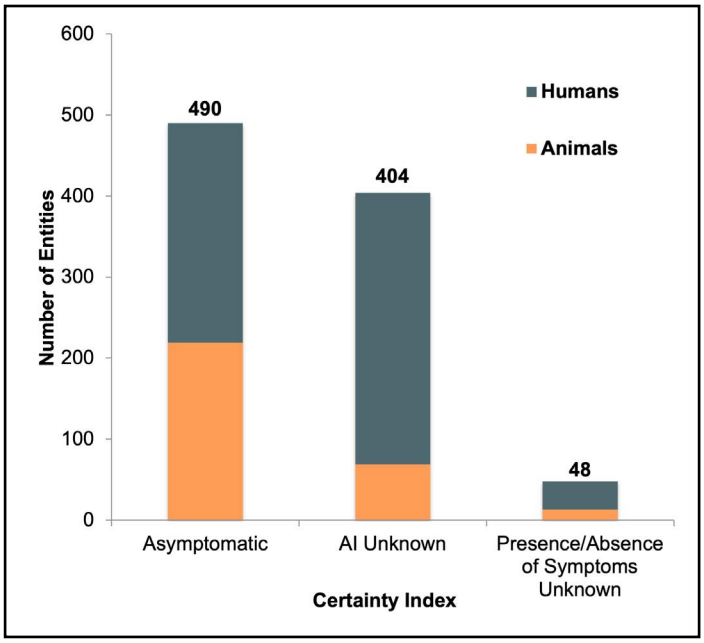
Table 14. Incident inquiries by certainty index (CI)

CI for All Categories of Entities					Breakdown of Human-Entity Incident Inquiries			
Certainty Index (CI)	Humans	Animals	Other	Total	Male	Female	Groups	Gender Not Stated
Unclassifiable	640	300	644	1584	227	323	83	6
Definite	0	0	0	0	0	0	0	0
Consistent	225	84	0	309	79	128	18	1
Inconsistent	197	70	0	267	67	121	9	0

Graph 14.1. Certainty index for incidents



Graph 14.2. Unclassifiable CI categories



15. Severity Index

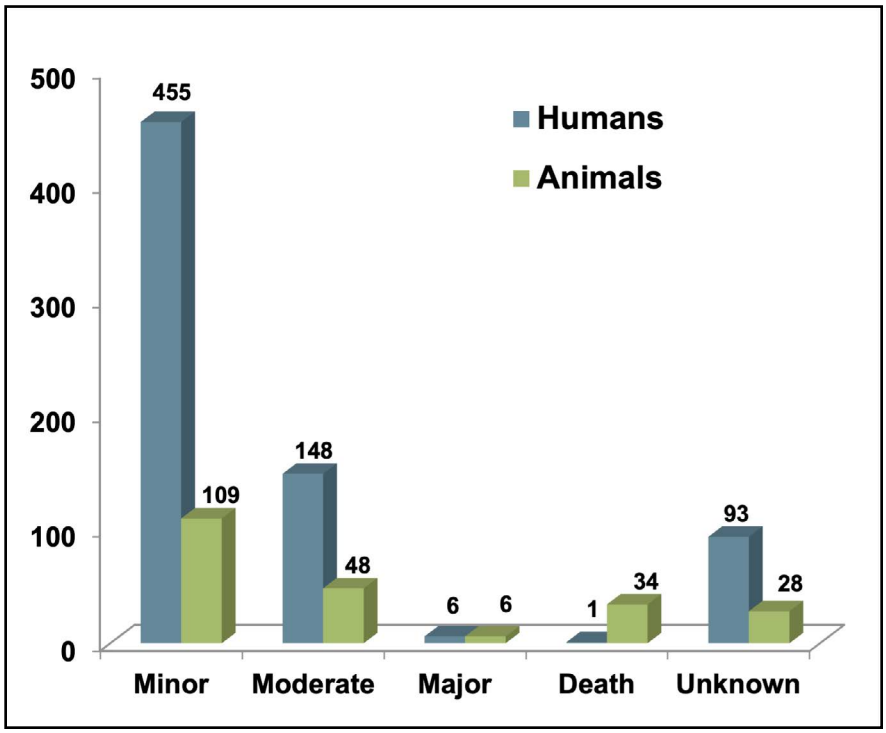
Table and Graph 15 summarize the severity of symptoms for all human and animal incidents reported to NPIC.

For all human pesticide incidents with reported exposures, 42.8% had minor symptoms, 13.9% had moderate symptoms, 0.6% had major symptoms, and 0.1% reported a death. Symptoms were unknown in 8.8% of human incidents. In 33.8% of human exposure incidents, the person reported that they did not experience any symptoms.

Table 15. Human and animal incidents by severity index (SI)

SI for All Categories of Entities				Breakdown of Human-Entity Incident Inquiries			
Severity Index (SI)	Humans	Animals	Total	Male	Female	Groups	Gender Not Stated
Minor	455	109	564	143	279	33	0
Moderate	148	48	196	54	82	11	1
Major	6	6	12	2	4	0	0
Death	1	34	35	0	1	0	0
Unknown	93	28	121	34	40	13	6
Asymptomatic	359	229	588	140	166	53	0

Graph 15. Severity index for human and animal incidents



What is the Severity Index?

The severity index is an estimate by NPIC as to the severity of signs/symptoms reported for incidents. The severity of signs/symptoms can be categorized as minor, moderate, major, death, unknown, or asymptomatic. The NPIC severity index is based on criteria used by poison control centers in their National Poison Data System (NPDS).

16. Description of Entities

The chart and graphs below provide a summary of entities involved in pesticide incidents. Of the 2,160 entities involved in incidents reported to NPIC during this period, 49.2% were human, 21.0% were animals, and 29.4% were environmental nontarget entities. Other entities (9, 0.4%) are miscellaneous items (i.e., sidewalk, food). Pesticide incidents may involve multiple entities.

Graph 16.1. Humans

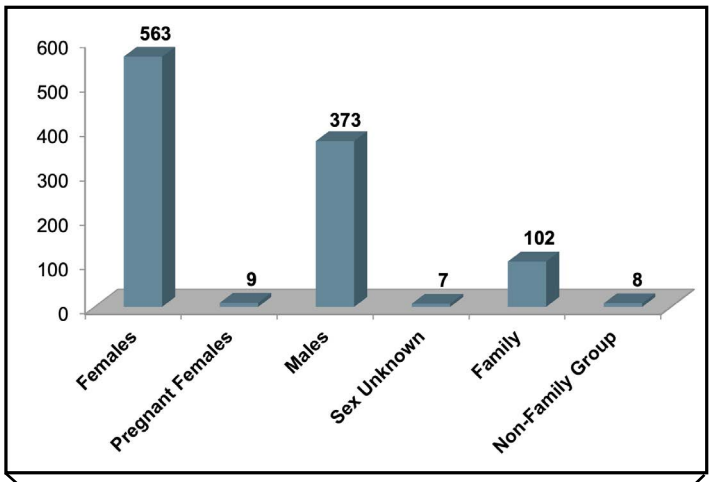
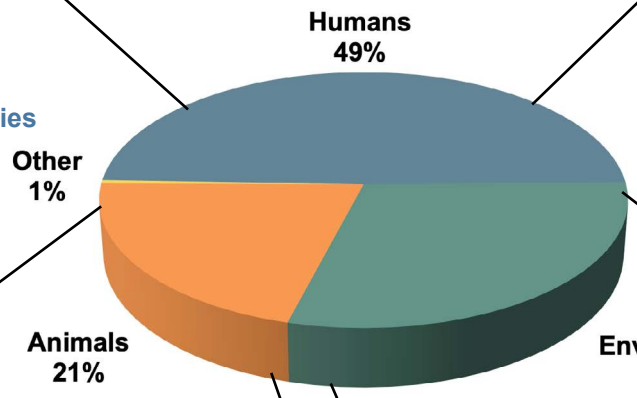
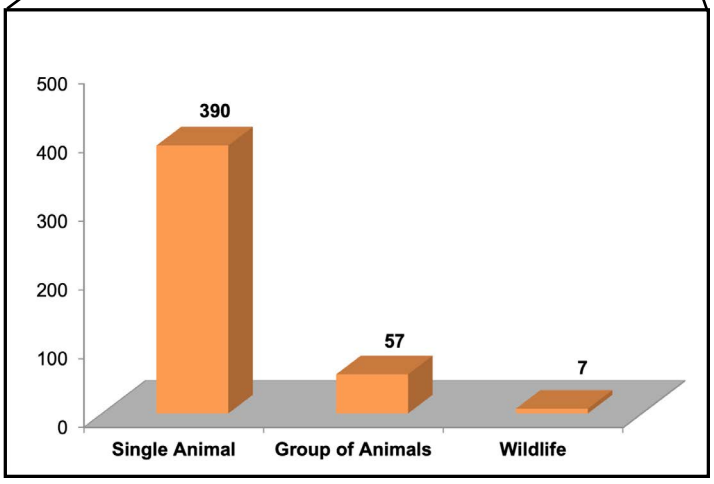
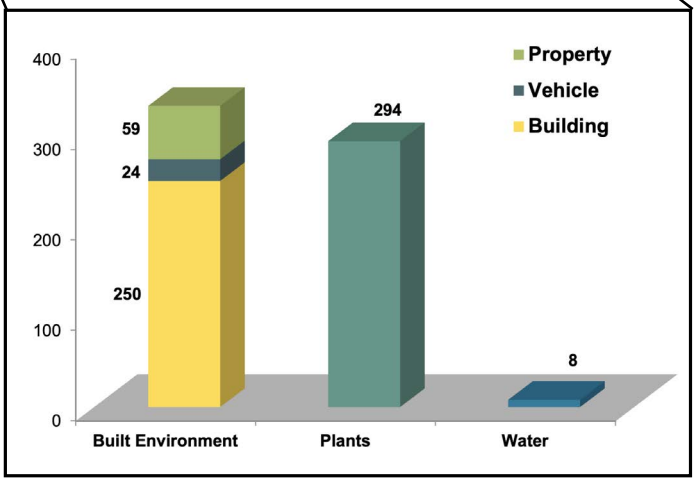


Chart 16. Description of entities





Graph 16.2. Animals



Graph 16.3. Environmental entities

17. Reported Deaths

Of the 454 animal entities involved in pesticide incidents, 34 deaths were reported. Of those, there were 25 animal deaths where the active ingredients were known (Table 17.1).

Table 17.2 describes reported deaths with known active ingredient(s) where signs and/or symptoms were consistent with literature, in the context of the reported exposure scenario.

A woman's death was reported to NPIC as a suspected poisoning after a hair sample tested positive for an unknown rodenticide. The caller did not have information about the exposure timeline or scenario, testing results, product information, or other details.

Table 17.1. Reported deaths with known active ingredient

Reported Deaths	Total
Animal Deaths	
Single Animal	14
Group of Animals	7
Wildlife	4
Total =	25

Table 17.2. Reported animal deaths with compatible signs/symptoms in severity

PESTICIDE PRODUCT	ACTIVE INGREDIENT	INCIDENT TYPE	ENTITY	CERTAINTY INDEX	STATE
N/A	BROMADIOLONE	Exposure: Possible	Wildlife	Consistent	CT
TALSTAR	BIFENTHRIN	Exposure: Possible	Group of Animals	Consistent	WI
MERIT	IMIDACLOPRID	Exposure: Possible	Group of Animals	Consistent	MD
N/A	STRYCHNINE	Exposure: Possible	Group of Animals	Consistent	MT
MARTIN'S GOPHER BAIT	STRYCHNINE	Exposure: Ingestion	Single Animal	Consistent	TX
AQUA-RESLIN	PIPERONYL BUTOXIDE | PERMETHRIN	Exposure: Possible	Group of Animals	Consistent	SD

18. Entity Age

Table 18 and Graph 18 summarize the ages of people involved in incidents reported to NPIC. Among 952 single human entities, NPIC was able to collect the person's age 83.2% of the time. NPIC aims to capture the age for all human entities; occasionally callers decline to provide that information.

Among the 792 humans with known age, 10.5% were children (ages 4 and under), and 28.8% were seniors (ages 65 and over).

Graph 18. Age of people involved in reported incidents

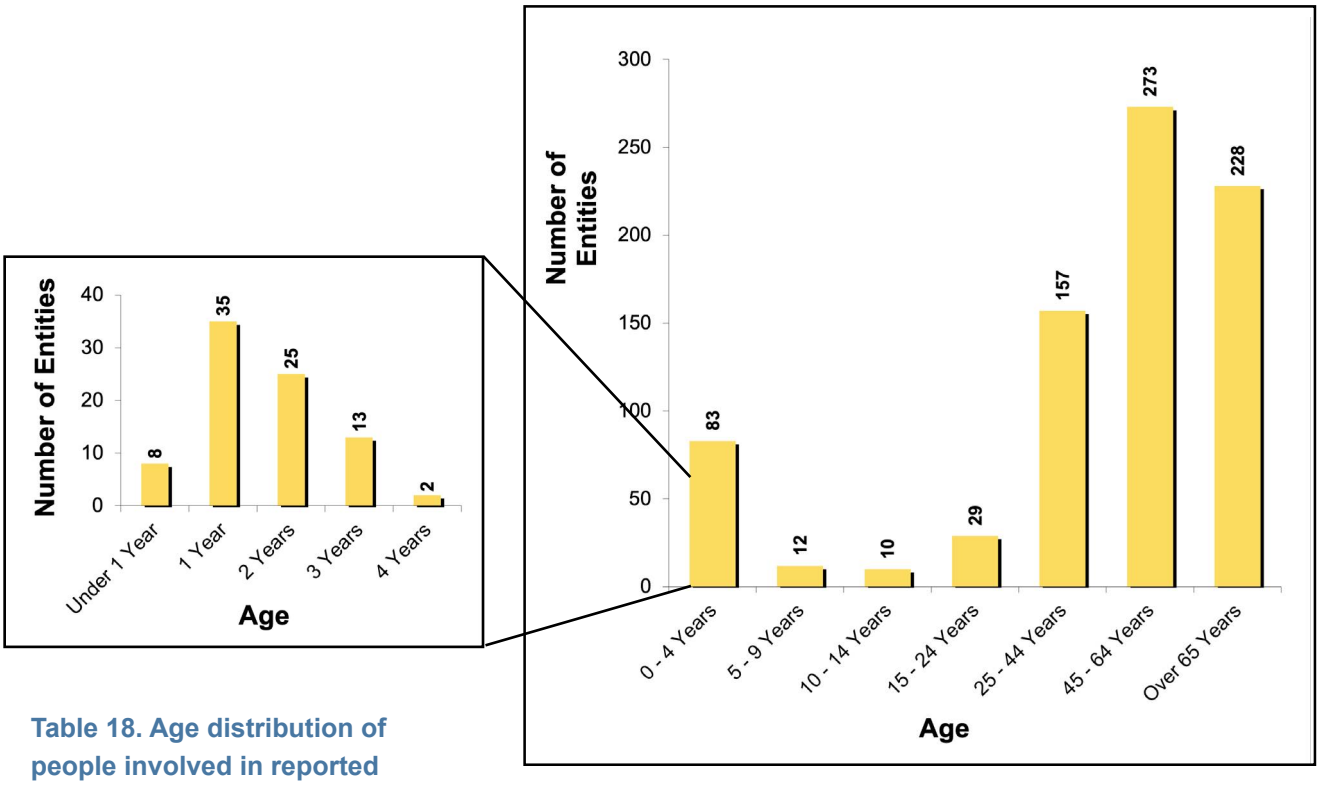


Table 18. Age distribution of people involved in reported incidents

Age Category	Total
Under 1 Year	8
1 Year	35
2 Years	25
3 Years	13
4 Years	2
Total (0 - 4 Years) =	83
5 - 9 Years	12
10 - 14 Years	10
15 - 24 Years	29
25 - 44 Years	157
45 - 64 Years	273
Over 65 years	228

19. Notable Exposures

There were 2,160 entities potentially exposed to pesticides in 1,623 reported incidents.

Figure 19.1

There were 1,623 pesticide incidents reported, involving 2,160 exposed entities (people, animals, buildings, plants, soil, and water).

Total = 2,160 entities

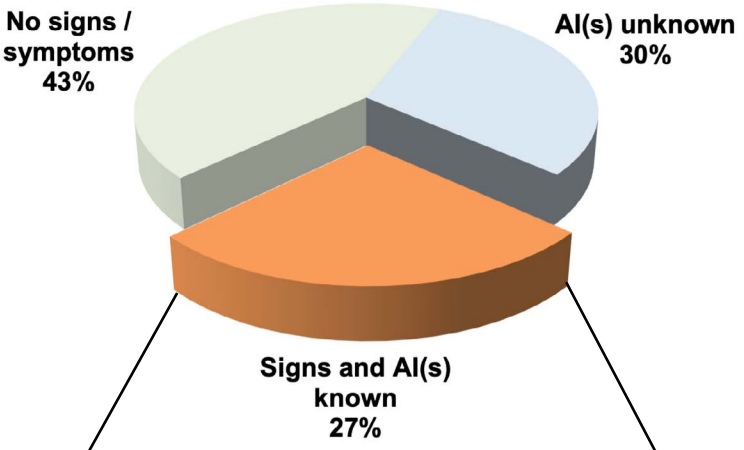


Figure 19.2

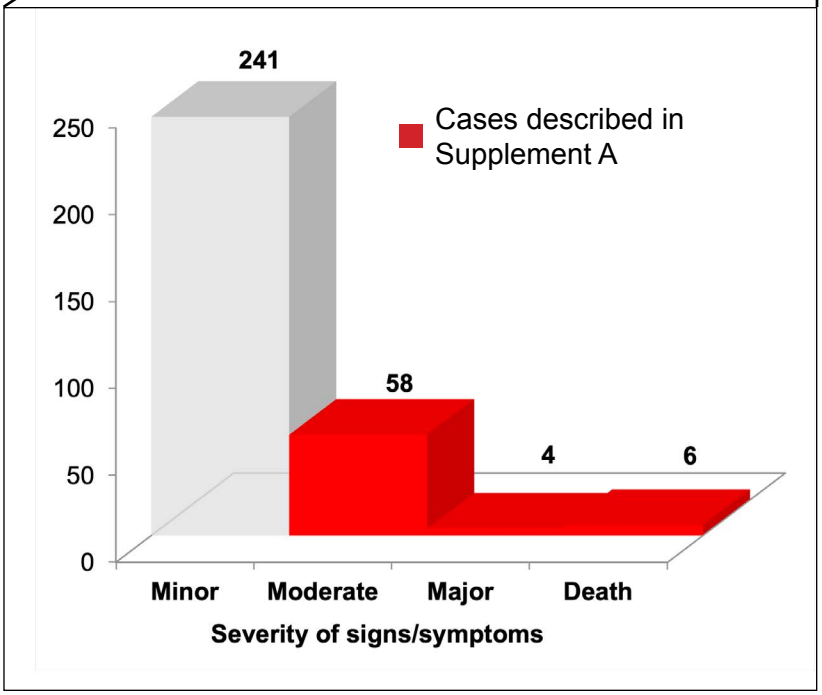
Human and animal entities potentially exposed to a known pesticide, with reported signs/ symptoms.

Total = 576 entities

Figure 19.3

Human and animal entities potentially exposed to a known pesticide with reported signs/ symptoms that were **consistent** with reports in the literature for that pesticide.

Total = 309 entities



Signs and symptoms are compared to the open literature, including fact sheets, case reports, textbooks, and articles. Furthermore, the timing of onset and duration are considered.

Pages 36-40 describe the 68 entities represented by the red bars in Figure 19.3.

VETERINARY REPORTING

NPIC developed a web-based portal for veterinarians to report adverse reactions to pesticides among animals. NPIC does not verify or conduct quality assurance of the information submitted into the Veterinary Incident Reporting Portal (VIRP).

Veterinarians submitted 19 incident reports to the VIRP involving 19 animals (16 canine, 2 feline, and 1 other). All VIRP reports are forwarded to EPA quarterly, in their entirety.

Table 20.1 and Chart 20.1 summarize the formulation of products that were involved in the incidents reported by veterinarians. About a third of incidents were pellet products (35%).

Table 20.2 and Chart 20.2 summarize the pesticide types that were involved in the incidents reported by veterinarians. More than half of the products reported in incidents were insecticides (53%).

Table 20.1. Product formulations as reported in VIRP

Known Formulations	Number of Products
	2020
Pellet	6
Other	5
Liquid	2
Powder	2
Spot-on	2
Unknown	2
Total =	19

Chart 20.1. Product formulations reported in VIRP

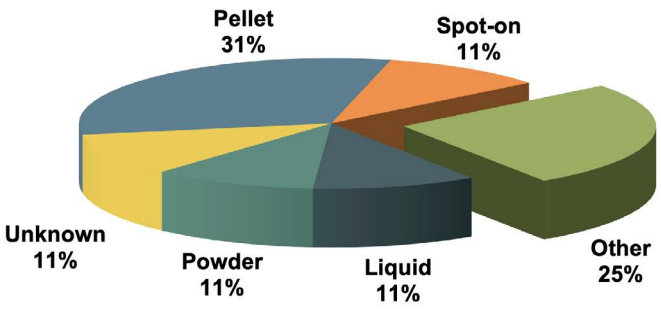


Table 20.2. Product types as reported in VIRP

Product Type	Number of Products
	2020
Insecticide	10
Rodenticide	5
Herbicide	1
Molluscicide	1
Other	1
Unknown	1
Total =	19

Chart 20.2. Product types reported in VIRP

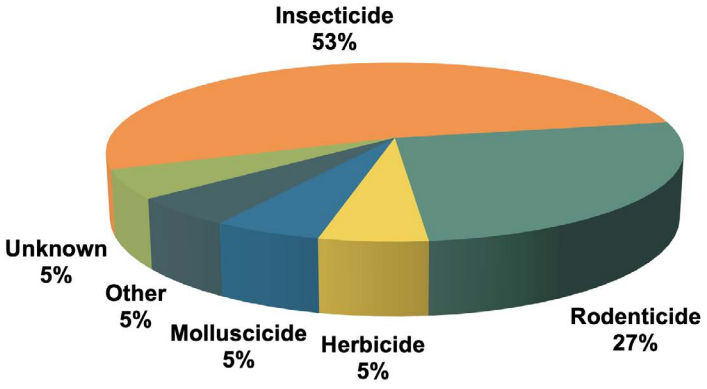


Table 20.3 and Chart 20.3 show the types of animal symptoms reported to the VIRP. Symptoms are classified as dermatological (e.g., irritant, sloughing, ulcer), gastrointestinal (e.g., diarrhea, vomiting), neurological (e.g., depression, excited state, seizures, tremors), none, or other. Multiple symptoms may be reported for each animal. Of the reported symptoms, 39% were classified as neurological, 32% were classified as gastrointestinal, 13% were classified as other, 10% were classified as none, and 6% were classified as dermatological.

Table 20.3. Animal symptoms as reported in VIRP

Symptom	Number of Animals
	2020
Dermatological: Irritant	1
Dermatological: Ulcer	1
Dermatological: Sloughing	0
Dermatological Total	2
Gastrointestinal: Vomiting	6
Gastrointestinal: Diarrhea	4
Gastrointestinal Total	10
Neurological: Seizure	5
Neurological: Tremor	4
Neurological: Depression	2
Neurological: Excited	1
Neurological Total	12
Other	4
None	3
Total =	31

Chart 20.3. Animal symptoms as reported in VIRP

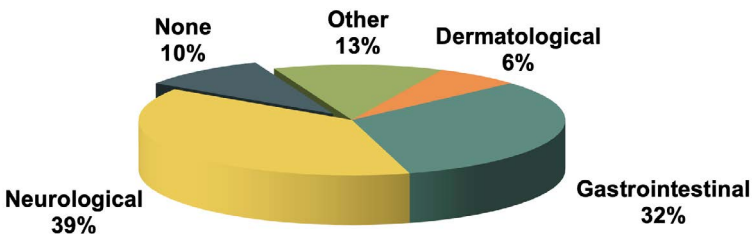


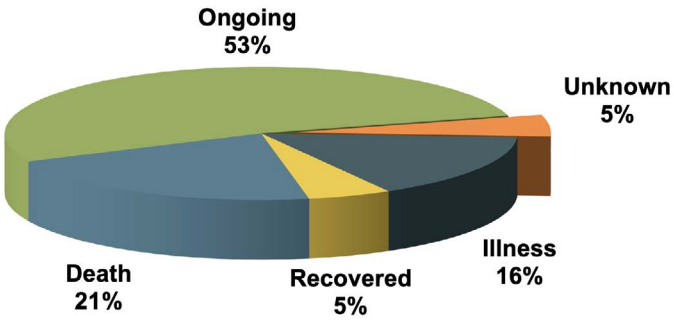
Table 20.4 and Chart 20.4 summarize the outcomes associated with each animal incident reported in the VIRP. Multiple animals may be involved in each VIRP report. Thus, totals reflect the number of animals, as opposed to the number of reports.

Of the total number of animals involved in VIRP incident reports, 53% of the cases were ongoing. The affected animals had recovered at the time of the report in 5% of cases. Twenty-one percent (21%) of the outcomes reported an animal death.

Table 20.4. Incident outcomes as reported in VIRP

Outcome	Number of Animals
	2020
Ongoing	10
Death	4
Illness	3
Recovered	1
Unknown	1
Total:	19

Chart 20.4. Incident outcomes as reported in VIRP



ECOLOGICAL REPORTING

In 2009, NPIC developed a web-based portal to facilitate reporting of ecological incidents. It was designed by the US EPA Office of Pesticide Programs (OPP), built and hosted by Oregon State University.

NPIC does not verify reports through independent investigation, nor does NPIC conduct quality assurance of the information submitted into the Eco-portal. NPIC provides each report, without modification, to OPP quarterly, in their entirety. More recently, NPIC developed programming to make that delivery automatic and immediate.

Reports submitted to the Eco-portal in 2020 involved possible exposures to bees (29), plants (2), fish (2), insects (1), reptiles (1), mammals (1), and birds (1). Table 21.1 summarizes the active ingredients involved in the 37 reports submitted to the Eco-portal.

Table 21.1. Active ingredients involved in the Eco-reports

Active Ingredient	Quantity
UNKNOWN	38
CLOTHIANIDIN	2
METALAXYL	2
PROTHIONCONAZOLE	2
TRIFLOXYSTROBIN	2
FLUOXASTROBIN	2
IPCONAZOLE	2
CARBENDAZIM	1
MALATHION	1
BIFENTHRIN	1
GLYPHOSATE	1
PERMETHRIN	1
PROPYLENE GLYCOL	1

NPIC incidents with compatible signs/symptoms that were greater than "minor" in severity

Pesticide Product	Active Ingredient	Incident Type	Entity[1]	Certainty Index	Severity Index	State	Log Number[2]
MICROBAN 24 HOUR	ADBAC | DDAC	Exposure: Dermal	Male	Consistent	Moderate	TX	165
BEDBUG & INSECT INDOOR RTU	PIPERONYL BUTOXIDE | BIFENTHRIN | IMIDACLOPRID	Exposure: Inhalation	Male	Consistent	Moderate	CA	805
VIKANE	SULFURYL FLUORIDE	Exposure: Unknown	Male	Consistent	Moderate	FL	809
N/A	BROMADIOLONE	Exposure: Possible	Wildlife	Consistent	Death	CT	1007
NUVAN PEST STRIPS	DICHLORVOS	Exposure: Inhalation	Male	Consistent	Moderate	FN	1150
TOMCAT	BROMETHALIN	Exposure: Ingestion	Single Animal	Consistent	Moderate	VA	1282
KAPUT D POCKET GOPHER BAIT	DIPHACINONE	Exposure: Possible	Single Animal	Consistent	Moderate	CO	1353
N/A	PERMETHRIN	Exposure: Dermal | Misapplication: Homeowner	Single Animal	Consistent	Moderate	CA	1577
CB INVADER WITH PROPOXUR	PROPOXUR	Exposure: Dermal	Female	Consistent	Moderate	TX	1732
OLD FASHIONED MOTHBALLS	NAPHTHALENE	Exposure: Possible	Single Animal	Consistent	Moderate	AL	1748
PROTECTION THAT LIVES ON MICROBAN 24 HOUR KEEPS KILLING 99.9% OF BACTE	ADBAC | DDAC	Exposure: Inhalation | Exposure: Dermal	Female	Consistent	Moderate	NC	1895
ZEP DV-7	ADBAC | DDAC	Exposure: Unknown | Workplace Exposure	Female	Consistent	Moderate	NC	2291
MANIKA	LAMBDA-CYHALOTHRIN | SODIUM HYPOCHLORITE	Exposure: Ingestion	Single Animal	Consistent	Moderate	OH	2876
MICROBAN	ADBAC | DDAC	Exposure: Inhalation	Male	Consistent	Moderate	TX	3525
MGK FORMULA 3126	PIPERONYL BUTOXIDE | PYRIPROXYFEN | LAMBDA-CYHALOTHRIN | PRALLETHRIN	Exposure: Dermal	Male	Consistent	Moderate	AZ	3655
RAID SPRAY	CYPERMETHRIN | IMIPROTHRIN	Exposure: Ingestion	Single Animal	Consistent	Moderate	NY	3771

1. Human entities are described as "male" and "female," regardless of the person's age.
2. When a log number appears in the table more than once, it reflects multiple exposed entities reported in a single incident.

NPIC incidents with compatible signs/symptoms that were greater than "minor" in severity

Pesticide Product	Active Ingredient	Incident Type	Entity[1]	Certainty Index	Severity Index	State	Log Number[2]
N/A	BIFENTHRIN	Exposure: Ingestion	Single Animal	Consistent	Moderate	GA	3798
RM43 TOTAL VEGETATION CONTROL	2,4-D | GLYPHOSATE	Exposure: Ingestion	Single Animal	Consistent	Moderate	GA	4528
CASERON	2,4-D | DICHLOBENIL	Exposure: Unknown | Exposure: Ingestion | Exposure: Inhalation | Occupational Exposure | Exposure: Dermal	Male	Consistent	Moderate	OR	4592
BRUTAB 65	SODIUM DICHLORO-S-TRIAZINETRIONE	Exposure: Ocular | Exposure: Dermal	Male	Consistent	Major	CA	4608
N/A	MALATHION	Exposure: Inhalation	Female	Consistent	Moderate	HI	4634
RM 43	GLYPHOSATE | IMAZAPYR	Exposure: Ingestion	Single Animal	Consistent	Moderate	KY	4839
MICROBAN	ADBAC | DDAC	Exposure: Inhalation | Exposure: Dermal	Female	Consistent	Moderate	IN	4844
N/A	2,4-D | TRICLOPYR	Exposure: Possible	Single Animal	Consistent	Moderate	VA	4980
FERTI-LOME BROAD SPECTRUM LANDSCAPE & GARDEN FUNGICIDE RTU	CHLOROTHALONIL	Exposure: Unknown	Female	Consistent	Moderate	IL	5040
TALSTAR	BIFENTHRIN	Exposure: Possible	Group of Animals	Consistent	Death	WI	5181
GF-3335 | RD 1617 HERBICIDE	2,4-D | GLYPHOSATE	Exposure: Ingestion | Exposure: Dermal	Female	Consistent	Moderate	MI	5534
GF-3335 | RD 1617 HERBICIDE	2,4-D | GLYPHOSATE	Exposure: Ingestion	Single Animal	Consistent	Moderate	MI	5534
ENOZ MOTHBALLS	PARADICHLOROBENZENE	Exposure: Inhalation	Male	Consistent	Moderate	NY	5880
N/A	NAPHTHALENE	Exposure: Inhalation	Male	Consistent	Moderate	ID	6112
MERIT	IMIDACLOPRID	Exposure: Possible	Group of Animals	Consistent	Death	MD	6197
ORTHO HOME DEFENSE	BIFENTHRIN	Exposure: Dermal	Female	Consistent	Moderate	FL	6219

1. Human entities are described as "male" and "female," regardless of the person's age.
2. When a log number appears in the table more than once, it reflects multiple exposed entities reported in a single incident.

NPIC incidents with compatible signs/symptoms that were greater than "minor" in severity

Pesticide Product	Active Ingredient	Incident Type	Entity[1]	Certainty Index	Severity Index	State	Log Number[2]
PET ARMOR	FIPRONIL | METHOPRENE	Exposure: Dermal	Single Animal	Consistent	Moderate	PA	6301
ENOZ OLD FASHIONED MOTHBALLS	NAPHTHALENE	Exposure: Ingestion	Single Animal	Consistent	Moderate	CO	6306
K9 ADVANTIX II LARGE DOG	PERMETHRIN | PYRIPROXYFEN | IMIDACLOPRID	Exposure: Dermal	Single Animal	Consistent	Moderate	FL	6334
N/A	STRYCHNINE	Exposure: Possible	Group of Animals	Consistent	Death	MT	6398
FRONTLINE PLUS	FIPRONIL | METHOPRENE	Exposure: Dermal	Single Animal	Consistent	Moderate	NE	6509
N/A	CHLORPYRIFOS	Exposure: Inhalation | Exposure: Dermal	Male	Consistent	Moderate	SC	6771
LATIGO	2,4-D | DICAMBA	Occupational Exposure | Exposure: Dermal	Female	Consistent	Moderate	OR	6939
INVADER | CD 80	PROPOXUR | PYRETHRINS	Exposure: Inhalation	Female	Consistent	Moderate	NY	7117
AQUADUET	PIPERONYL BUTOXIDE | D-PHENOTHRIN | PRALLETHRIN	Exposure: Ingestion | Exposure: Inhalation | Exposure: Ocular | Exposure: Dermal	Female	Consistent	Moderate	VA	7417
V-10233 HERBICIDE | LORSBAN-4E | PROWL H2O HERBICIDE	PYROXASULFONE | FLUMIOXAZIN | PENDIMETHALIN | CHLORPYRIFOS	Exposure: Inhalation	Female	Consistent	Major	OR	7763
N/A	PERMETHRIN	Exposure: Possible	Single Animal	Consistent	Moderate	TX	7844
DOMINION	IMIDACLOPRID	Exposure: Unknown	Male	Consistent	Moderate	TN	7909
TERRO AND BARRIER	BORIC ACID	Exposure: Possible	Single Animal	Consistent	Moderate	WA	8009
N/A	BIFENTHRIN	Exposure: Ingestion	Male	Consistent	Moderate	CO	8082
N/A	2,4-D	Exposure: Ingestion | Exposure: Dermal	Male	Consistent	Moderate	AR	8095

1. Human entities are described as "male" and "female," regardless of the person's age.
2. When a log number appears in the table more than once, it reflects multiple exposed entities reported in a single incident.

NPIC incidents with compatible signs/symptoms that were greater than "minor" in severity

Pesticide Product	Active Ingredient	Incident Type	Entity[1]	Certainty Index	Severity Index	State	Log Number[2]
CVS BED BUG AND MITE SPRAY	PERMETHRIN	Exposure: Dermal	Female	Consistent	Moderate	PA	8211
KAPUT COMBO BAIT MINI BLOCKS FOR RODENTS & FLEAS	IMIDACLOPRID | WARFARIN	Exposure: Possible	Single Animal	Consistent	Moderate	LA	8218
MARTIN'S GOPHER BAIT	STRYCHNINE	Exposure: Ingestion	Single Animal	Consistent	Death	TX	8404
BAYER ADVANCED NATRIA INSECTICIDAL SOAP READY TO USE	POTASSIUM SALTS OF FATTY ACIDS	Exposure: Ocular	Female	Consistent	Moderate	VA	8430
GRUB BEATER	IMIDACLOPRID	Exposure: Possible	Single Animal	Consistent	Moderate	UN	9017
SAFER MOSQUITO AND TICK KILLER	PYRETHRINS	Exposure: Inhalation	Female	Consistent	Moderate	CA	9042
N/A	PARAQUAT	Exposure: Dermal	Adult - Sex Unknown	Consistent	Moderate	UN	9212
QT 3	QUATERNARY AMMONIUM COMPOUNDS	Exposure: Unknown	Female	Consistent	Major	NY	9277
N/A	NAPHTHALENE	Exposure: Inhalation	Single Animal	Consistent	Moderate	WI	9389
COUNTRY VET FARMGARD PERMETHRIN CONCENTRATE	PERMETHRIN	Exposure: Dermal | Misapplication: Homeowner	Single Animal	Consistent	Moderate	TX	9423
AQUA-RESLIN	PIPERONYL BUTOXIDE | PERMETHRIN	Exposure: Possible	Group of Animals	Consistent	Death	SD	9489
TERMIDEL	IMIDACLOPRID	Exposure: Inhalation	Male	Consistent	Moderate	FN	9561
N/A	BROMETHALIN	Exposure: Possible	Single Animal	Consistent	Major	CA	9684
HOT SHOT FOGGER WITH ODOR NEUTRALIZER	TETRAMETHRIN | CYPERMETHRIN	Exposure: Inhalation	Female	Consistent	Moderate	ME	9984
TRANSPORT MIKRON	BIFENTHRIN | ACETAMIPRID	Exposure: Inhalation	Female	Consistent	Moderate	PA	10202
RAID BUG BOMB	PYRETHRINS	Exposure: Unknown	Male	Consistent	Moderate	CA	10233

1. Human entities are described as "male" and "female," regardless of the person's age.
2. When a log number appears in the table more than once, it reflects multiple exposed entities reported in a single incident.

NPIC incidents with compatible signs/symptoms that were greater than "minor" in severity

Pesticide Product	Active Ingredient	Incident Type	Entity[1]	Certainty Index	Severity Index	State	Log Number[2]
RECTORSEAL ACTABS	ADBAC	Exposure: Unknown	Female	Consistent	Moderate	OR	10380
NYLAR 10EC | K-OTHRINE SC INSECTICIDE	PYRIPROXYFEN | DELTAMETHRIN	Exposure: Inhalation	Male	Consistent	Moderate	NY	10423
NYLAR 10EC | K-OTHRINE SC INSECTICIDE	PYRIPROXYFEN | DELTAMETHRIN	Exposure: Inhalation	Female	Consistent	Moderate	NY	10423
NYLAR 10EC | K-OTHRINE SC INSECTICIDE	PYRIPROXYFEN | DELTAMETHRIN	Exposure: Inhalation	Male	Consistent	Moderate	NY	10423
RAID MAX CONCENTRATED FOGGER | RAID DEEP REACH FOGGER CONCENTRATE | HOT SHOT ODOR FREE NO MESS FOGGER	CYPERMETHRIN	Exposure: Unknown	Family	Consistent	Moderate	NY	10463

1. Human entities are described as "male" and "female," regardless of the person's age.
2. When a log number appears in the table more than once, it reflects multiple exposed entities reported in a single incident.